Vol. 1223 Number 2

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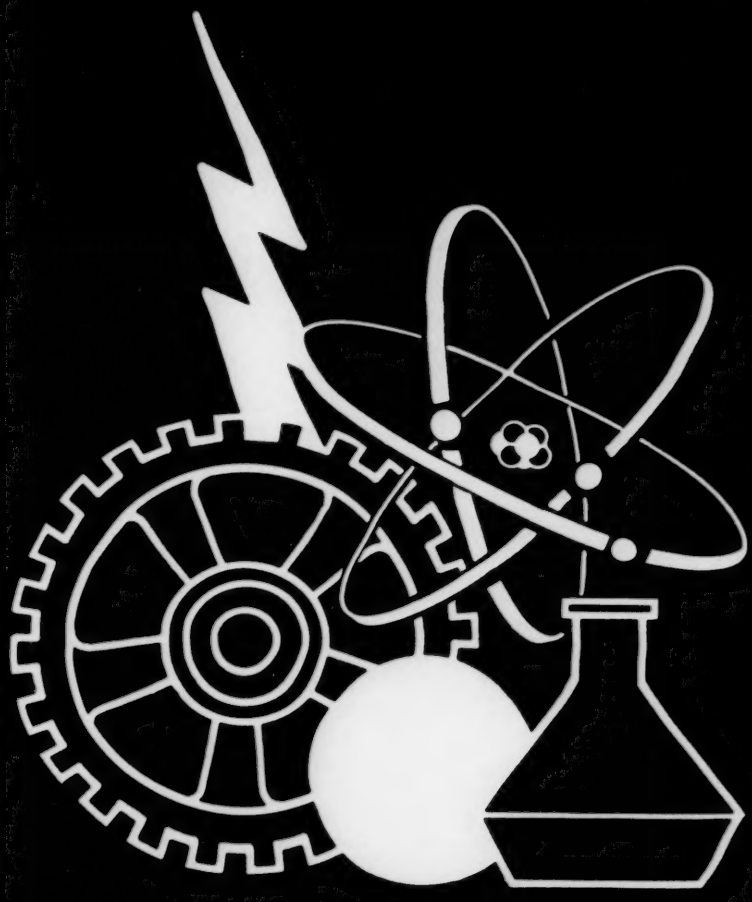
PATENTS

June 8, 1999



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

June 8, 1999 Volume 1223 Number 2

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General and Mechanical (5,909,705)			675
Chemical (5,910,211)			847
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1219 O.G. 29, on February 9, 1999.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was decreased, effective June 1, 1999, and was announced in the *Official Gazette* at 1222 O.G. 95, on May 25, 1999.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997. A change in the maximum number of designation fees payable and a reduction for electronic filing, both with effect from January 1, 1999, were announced in the *Official Gazette* at 1217 O.G. 148, on December 29, 1998.

Certain domestic PCT fees have been changed by Public Law 105-358 of November 10, 1998, and were announced in the *Official Gazette* at 1217 O.G. 148, on December 29, 1998.

The schedule of PCT fees (in U.S. dollars), as of June 1, 1999, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	$240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	$700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a) and filing fee under 37 CFR 1.16(a) paid)	$450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	$210.00
European Patent Office as ISA	$1227.00
International fees	
Basic fee	$455.00
Basic supplemental fee (for each page over 30)	$10.00
Designation fee per country or region	
— For the first 10 national or regional offices designated	$105.00
— For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	$105.00
— Confirmation fee	$52.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	$162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	$490.00
— Additional examination fee, per additional invention (payable only upon invitation)	$140.00
— USPTO was not ISA in PCT Chapter I	$750.00
— Additional examination fee, per additional invention (payable only upon invitation)	$270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	$48.00	$96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	$335.00	$670.00
USPTO was ISA but not IPEA	$380.00	$760.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	$485.00	$970.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	$420.00	$840.00
Other National fees		
— For each independent claim in excess of 3	$39.00	$78.00
— For each claim in excess of 20.	$9.00	$18.00
— For each application containing a multiple dependent claim	$130.00	$260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	$65.00	$130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	$130.00	$130.00

Apr. 28, 1999

Q. TODD DICKINSON
Acting Assistant Secretary of Commerce and Acting Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment

the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on May 28, 1996 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,519,891 through 5,522,090
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 26, 1992 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,115,516 through 5,117,505
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 24, 1988 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,745,634 through 4,747,161
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to *"Commissioner of Patents and Trademarks, Box M. Fee,* Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $470.00
By other than a small entity $940.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $950.00
By other than a small entity $1900.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1455.00
By other than a small entity $2910.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $700.00
(2) unintentional $1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED ON March 31, 1999 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
4,653,132	06/815,597	03/31/87
4,653,133	06/895,776	03/31/87
4,653,139	06/699,795	03/31/87
4,653,140	06/781,697	03/31/87
4,653,143	06/835,189	03/31/87
4,653,144	06/844,573	03/31/87
4,653,147	06/720,674	03/31/87
4,653,160	06/549,662	03/31/87
4,653,164	06/580,038	03/31/87
4,653,166	06/688,602	03/31/87
4,653,173	06/708,192	03/31/87
4,653,178	06/760,891	03/31/87
4,653,179	06/761,019	03/31/87
4,653,180	06/703,599	03/31/87
4,653,181	06/821,539	03/31/87
4,653,186	06/756,328	03/31/87
4,653,189	06/745,218	03/31/87
4,653,190	06/478,835	03/31/87
4,653,197	06/884,171	03/31/87
4,653,202	06/826,257	03/31/87
4,653,204	06/793,035	03/31/87
4,653,206	06/800,713	03/31/87
4,653,208	06/861,526	03/31/87
4,653,209	06/664,593	03/31/87
4,653,217	06/731,371	03/31/87
4,653,233	06/726,527	03/31/87
4,653,234	06/643,373	03/31/87
4,653,235	06/800,001	03/31/87
4,653,245	06/689,027	03/31/87
4,653,246	06/692,042	03/31/87
4,653,255	06/754,026	03/31/87
4,653,263	06/820,797	03/31/87
4,653,277	06/873,883	03/31/87
4,653,283	06/811,506	03/31/87
4,653,284	06/625,925	03/31/87
4,653,296	06/857,017	03/31/87
4,653,310	06/597,921	03/31/87
4,653,316	06/839,604	03/31/87
4,653,317	06/752,930	03/31/87
4,653,320	06/769,981	03/31/87
4,653,328	06/726,748	03/31/87
4,653,335	06/712,569	03/31/87
4,653,336	06/851,586	03/31/87
4,653,337	06/825,616	03/31/87
4,653,342	06/742,622	03/31/87
4,653,344	06/694,597	03/31/87

Patent Number	Application Number	Issue Date
4,653,361	06/747,224	03/31/87
4,653,370	06/802,456	03/31/87
4,653,379	06/627,785	03/31/87
4,653,380	06/621,006	03/31/87
4,653,384	06/815,051	03/31/87
4,653,387	06/789,769	03/31/87
4,653,389	06/767,747	03/31/87
4,653,393	06/867,181	03/31/87
4,653,398	06/756,815	03/31/87
4,653,413	06/851,341	03/31/87
4,653,415	06/896,878	03/31/87
4,653,418	06/750,984	03/31/87
4,653,421	06/822,015	03/31/87
4,653,423	06/776,495	03/31/87
4,653,424	06/797,996	03/31/87
4,653,431	06/764,408	03/31/87
4,653,435	06/795,556	03/31/87
4,653,436	06/819,362	03/31/87
4,653,442	06/787,769	03/31/87
4,653,457	06/842,554	03/31/87
4,653,458	06/810,185	03/31/87
4,653,466	06/456,173	03/31/87
4,653,469	06/763,468	03/31/87
4,653,470	06/811,228	03/31/87
4,653,471	06/801,399	03/31/87
4,653,474	06/752,506	03/31/87
4,653,480	06/766,536	03/31/87
4,653,484	06/800,801	03/31/87
4,653,491	*06/743,748*	*03/31/87*
4,653,493	06/699,924	03/31/87
4,653,503	06/554,835	03/31/87
4,653,504	06/716,939	03/31/87
4,653,505	06/737,472	03/31/87
4,653,509	06/751,393	03/31/87
4,653,514	06/615,052	03/31/87
4,653,521	06/882,728	03/31/87
4,653,522	06/882,778	03/31/87
4,653,528	06/891,353	03/31/87
4,653,530	06/868,637	03/31/87
4,653,531	06/892,368	03/31/87
4,653,532	06/799,330	03/31/87
4,653,533	06/801,813	03/31/87
4,653,538	06/822,744	03/31/87
4,653,548	06/758,573	03/31/87
4,653,559	06/713,979	03/31/87
4,653,560	06/814,137	03/31/87
4,653,561	06/765,524	03/31/87
4,653,562	06/885,394	03/31/87
4,653,565	06/758,822	03/31/87
4,653,568	06/476,384	03/31/87
4,653,569	06/827,288	03/31/87
4,653,576	06/729,385	03/31/87
4,653,587	06/830,731	03/31/87
4,653,589	06/745,052	03/31/87
4,653,600	06/828,182	03/31/87
4,653,604	06/742,745	03/31/87
4,653,610	06/789,539	03/31/87
4,653,613	06/803,169	03/31/87
4,653,620	06/739,404	03/31/87
4,653,621	06/731,019	03/31/87
4,653,622	06/686,354	03/31/87
4,653,629	06/832,813	03/31/87
4,653,639	06/832,269	03/31/87
4,653,642	06/776,687	03/31/87
4,653,647	06/882,433	03/31/87
4,653,654	06/887,965	03/31/87
4,653,655	06/812,336	03/31/87
4,653,664	06/622,734	03/31/87
4,653,671	06/732,075	03/31/87
4,653,674	06/272,003	03/31/87
4,653,698	06/899,765	03/31/87
4,653,701	06/832,494	03/31/87
4,653,718	06/683,394	03/31/87
4,653,721	06/838,530	03/31/87
4,653,724	06/776,002	03/31/87
4,653,726	06/836,485	03/31/87
4,653,746	06/679,298	03/31/87
4,653,748	06/651,653	03/31/87
4,653,762	06/806,899	03/31/87
4,653,767	06/805,625	03/31/87
4,653,780	06/538,098	03/31/87
4,653,790	06/829,014	03/31/87
4,653,791	06/779,220	03/31/87
4,653,796	06/800,786	03/31/87
4,653,798	06/812,003	03/31/87
4,653,804	06/739,409	03/31/87
4,653,807	06/733,745	03/31/87
4,653,829	06/822,731	03/31/87
4,653,834	06/756,017	03/31/87
4,653,837	06/655,696	03/31/87
4,653,839	06/748,082	03/31/87
4,653,852	06/688,506	03/31/87
4,653,861	06/644,766	03/31/87
4,653,867	06/740,815	03/31/87
4,653,872	06/367,981	03/31/87
4,653,873	06/663,376	03/31/87
4,653,884	06/846,112	03/31/87
4,653,891	06/700,783	03/31/87
4,653,894	06/818,927	03/31/87
4,653,897	06/685,877	03/31/87
4,653,899	06/825,876	03/31/87
4,653,909	06/793,812	03/31/87
4,653,912	06/777,466	03/31/87
4,653,921	06/773,908	03/31/87
4,653,926	06/497,154	03/31/87
4,653,929	06/737,193	03/31/87
4,653,938	06/256,642	03/31/87
4,653,944	*06/742,155*	*03/31/87*
4,653,951	06/764,288	03/31/87
4,653,967	06/737,640	03/31/87
4,653,970	06/768,291	03/31/87
4,653,972	06/691,648	03/31/87
4,653,977	06/693,495	03/31/87
4,653,981	06/781,585	03/31/87
4,653,985	06/672,372	03/31/87
4,653,996	06/664,003	03/31/87
4,653,999	06/783,130	03/31/87
4,654,006	06/845,295	03/31/87
4,654,007	06/734,326	03/31/87
4,654,026	06/686,287	03/31/87
4,654,028	06/823,950	03/31/87
4,654,031	06/723,247	03/31/87
4,654,034	06/825,524	03/31/87
4,654,044	06/758,171	03/31/87
4,654,052	06/748,000	03/31/87
4,654,054	06/724,466	03/31/87
4,654,055	06/509,628	03/31/87
4,654,062	06/884,574	03/31/87
4,654,068	06/818,412	03/31/87
4,654,069	06/790,557	03/31/87
4,654,070	06/780,037	03/31/87
4,654,075	06/745,045	03/31/87
4,654,087	06/722,972	03/31/87
4,654,094	06/771,448	03/31/87
4,654,096	06/640,525	03/31/87
4,654,099	06/773,444	03/31/87
4,654,102	06/867,908	03/31/87
4,654,115	06/849,247	03/31/87
4,654,118	06/845,671	03/31/87
4,654,119	06/799,053	03/31/87
4,654,120	06/793,400	03/31/87
4,654,123	06/815,519	03/31/87
4,654,125	06/584,806	03/31/87
4,654,126	06/785,128	03/31/87
4,654,129	06/859,907	03/31/87
4,654,144	06/825,128	03/31/87
4,654,151	06/762,340	03/31/87
4,654,159	06/754,560	03/31/87
4,654,160	06/786,565	03/31/87
4,654,163	06/716,047	03/31/87
4,654,167	06/794,795	03/31/87
4,654,172	06/613,194	03/31/87
4,654,178	06/818,744	03/31/87
4,654,181	06/663,943	03/31/87
4,654,186	06/585,671	03/31/87

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4,654,190	06/596,879	03/31/87
4,654,193	06/603,824	03/31/87
4,654,196	06/760,175	03/31/87
4,654,199	06/743,891	03/31/87
4,654,212	06/840,977	03/31/87
4,654,219	06/869,557	03/31/87
4,654,222	06/834,662	03/31/87
4,654,223	06/839,456	03/31/87
4,654,225	06/794,886	03/31/87
4,654,227	06/691,135	03/31/87
4,654,228	06/813,102	03/31/87
4,654,233	06/673,873	03/31/87
4,654,238	06/788,871	03/31/87
4,654,247	06/806,586	03/31/87
4,654,248	06/809,655	03/31/87
4,654,251	06/768,351	03/31/87
4,654.255	06/754,522	03/31/87
4,654,265	06/870,709	03/31/87
4,654,270	06/876,985	03/31/87
4,654,277	06/809,686	03/31/87
4,654,279	06/884,143	03/31/87
4,654,285	06/655,931	03/31/87
4,654,287	06/668,038	03/31/87
4,654,293	06/624,270	03/31/87
4,654,298	06/658,020	03/31/87
4,654,299	06/592,046	03/31/87
4,654,301	06/774,950	03/31/87
4,654,303	06/532,341	03/31/87
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5,003,283	07/468,241	03/26/91
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5,003,301	07/210,238	03/26/91
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5,003,315	07/590,704	03/26/91
5,003,317	07/378,593	03/26/91
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5,003,341	07/360,025	03/26/91
5,003,343	07/473,615	03/26/91

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5,003,345	07/458,482	03/26/91
5,003,349	07/508,205	03/26/91
5,003,360	07/379,928	03/26/91
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PATENTS WHICH EXPIRED ON March 28, 1999
DUE TO FAILURE TO PAY MAINTENANCE FEES

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4,581,287	06/764,091	08/09/85	04/08/86	04/19/99
4,812,195	06/940,890	12/12/86	03/14/89	04/16/99
5,142,820	07/626,749	12/13/90	09/01/92	04/22/99
5,153,781	07/436,981	10/19/89	10/06/92	04/16/99
5,159,758	07/767,325	09/30/91	11/03/92	04/20/99
5,281,732	07/815,700	12/31/91	01/25/94	04/22/99
5,298,129	07/976,118	11/13/92	03/29/94	04/19/99
5,298,130	07/976,117	11/13/92	03/29/94	04/19/99
5,305,190	07/717,362	06/19/91	04/19/94	04/19/99
5,306,388	07/828,503	01/31/92	04/26/94	04/16/99
5,328,212	08/055,677	04/30/93	07/12/94	04/16/99
5,356,879	07/835,496	02/14/92	10/18/94	04/21/99

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,760,472, Re. S.N. 09/301,014, Apr. 28, 1999, Cl. 360/046.000, DUAL CHANNEL READBACK RECOVERY SYSTEM, Vadim Minuhin, et. al., Owner of Record: *Seagate Technology, Inc., Scotts Valley, CA,* Attorney or Agent: David D. Brush, Ex. Gp.: 2753

5,625,425, Re. S.N. 09/298,898, Apr. 23, 1999, Cl. 351., DIVING MASK WITH LENSES AND METHOD OF FABRICATING THE SAME, Jon Kranhouse, Owner of Record: *Inventor,* Attorney or Agent: Douglas N. Larson, Ex. Gp.: 2873

5,625,436, Re. S.N. 09/300,376, Apr. 27, 1999, Cl. 355/053, SCANNING TYPE EXPOSURE APPARATUS AND EXPOSURE METHOD, Masamitsu Yanagihara, et. al., Owner of Record: *Nikon Corp., Tokyo, Japan,* Attorney or Agent: Mario A. Constantino, Ex. Gp.: 3721

5,750,465, Re. S.N. 09/298,096, Apr. 22, 1999, Cl. 503/227, PLASTICIZERS FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER, Kin K. Lum, et. al., Owner of Record: *Eastman Kodak Co., Rochester, NY,* Attorney or Agent: Harold E. Cole, Ex. Gp.: 1774

5,794,437, Re. S.N. 09/293,796, Apr. 16, 1999, Cl. 060/414, REGENERATIVE ADAPTIVE FLUID MOTOR CONTROL, Robert Moshe Lisniansky, Owner of Record: *Inventor,* Attorney or Agent: Inventor, Ex. Gp.: 3745

5,794,438, Re. S.N. 09/293,797, Apr. 16, 1999, Cl. 060/414, ADAPTIVE FLUID MOTOR FEEDBACK CONTROL, Robert Moshe Lisniansky, Owner of Record: *Inventor,* Attorney or Agent: Inventor, Ex. Gp.: 3745

5,794,441, Re. S.N. 09/293,794, Apr. 16, 1999, Cl. 060/414, ADAPTIVE FLUID FEEDBACK CONTROL, Robert Moshe Lisniansky, Owner of Record: *Inventor,* Attorney or Agent: Inventor, Ex. Gp.: 3745

5,794,442, Re. S.N. 09/293,795, Apr. 16, 1999, Cl. 060/414, ADAPTIVE FLUID MOTOR CONTROL, Robert Moshe Lisniansky, Owner of Record: *Inventor,* Attorney or Agent: Inventor, Ex. Gp.: 3745

Commissioner Ordered Reexaminations

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.2(b)).

In the event correspondence to the patent owner is not recieved, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.24(a)(5) and 1.525(b)).

5,794,473, Re. S.N. 90/005,302, Apr. 12, 1999, Cl. 072/008.9, METHOD OF REGULATING THE CROSS-SECTION OF ROLLING STOCK, Otmar Palzer, Owner of Record: *SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany,* Attorney or Agent: Friedrich Kueffner, New York, NY, Ex. Gp.: 3725, Requester: Commissioner of Patents and Trademarks, Washington, DC

5,811,894, Re. S.N. 90/005,300, Apr. 12, 1999, Cl. 307/118, SAFETY MODULE, Mark Buyers, et. al., Owner of Record: *Mark Buyers, Aberdeen, Scotland; Simon Benedict Fraser, Aberdeen, Scotland,* Attorney or Agent: Evan R. Witt, Madson and Metcalf, Salt Lake City, UT, Ex. Gp.: 2836, Requester: Commissioner of Patents and Trademarks, Washington, DC

5,825,051, Re. S.N. 90/005,301, Apr. 12, 1999, Cl. 257/082, OPTOELECTRONIC COMPONENT WITH CENTRAL HOLLOW, Karl-Heinz Bauer, et. al., Owner of Record: *Preh-Werke GmbH and Co., KG, Bad Neustadt/Saale, Germany,* Attorney or Agent: F. Prince Butler, Griffin Butler Whisenhunt and Kurtossy, Arlington, VA, Ex. Gp.: 2811, Requester: Commissioner of Patents and Trademarks, Washington, DC

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,499,255, Re. S.N. 90/005,313, Mar. 12, 1999, Cl. 528/095, PREPARATION OF EPOXY RESINS, C. S. Wang, et. al., Owner of Record: *The Dow Chemical Co., Midland, MI,* Attorney or Agent: Richard G. Waterman, James G. Carter and William D. Miller, Midland, MI, Ex. Gp.: 1712, Requester: Kenneth J. Burchfiel, Sughrue Mion Zinn MacPeak and Seas, Washington, DC

4,624,140, Re. S.N. 90/005,315, Apr. 6, 1999, Cl. 073/304C, LIQUID MEDIUM CAPACITIVE DISPLACEMENT SENSOR, Jack A. Ekchian, et. al., Owner of Record: *Optima Sensor Systems, Inc., Woodland Hills, CA,* Attorney or Agent: Berj A. Terzian, Pennie and Edmonds, New York, NY, Ex. Gp.: 2855, Requester: Macklanburg-Duncan Co., Oklahoma City, OK; c/o Sean V. O'Connell, McKinney and Stringer, Oklahoma City, OK

4,844,723, Re. S.N. 90/005,314, Apr. 5, 1999, Cl. 055/106, GAS CONDITIONING FOR AN ELECTROSTATIC PRECIPITATOR, Marco G. Tellini, et. al., Owner of Record: *Lab S. A., Lyon Cedex, France,* Attorney or Agent: Harry C. Jones, III, Pennie and Edmonds, New York, NY, Ex. Gp.: 1724, Requester: Douglass C. Hochstetler, Marshall, O'Toole, Gerstein Murray and Borun, Chicago, IL

4,939,674, Re. S.N. 90/005,316, Apr. 6, 1999, Cl. 395/109, LABEL GENERATION APPARATUS, Macy J. Price, et. al., Owner of Record: *Engineered Data Products, Inc., Broomfield, CO,* Attorney or Agent: James Graziano, Door, Carson, Sloan and Peterson, Denver, CO, Ex. Gp.: 2722, Requester: Walter R. Brookhart, Browning Bushman, 5718 Westheimer, Houston, TX

5,000,991, Re. S.N. 90/005,317, Apr. 6, 1999, Cl. 428/036.5, PROCESS FOR PRODUCING POLYESTER RESIN FOAM AND POLYESTER RESIN FOAM SHEET, Motoshige Hayashi, et. al., Owner of Record: *Sekisui Kaseihin Kogyo Kabushiki, Nara, Japan,* Attorney or Agent: David T. Nikaido, Nikaido Marmelstein Murray and Oram, Washington, DC, Ex. Gp.: 1772, Requester: Martin L. Katz, Rockey Milnamow and Katz, Ltd., Chicago, IL

5,018,519, Re. S.N. 90/005,319, Apr. 8, 1999, Cl. 128/203.29, MASK FOR ADMINISTERING AN ANESTHETIC GAS TO A PATIENT, Glenn E. Brown, Owner of Record: *Porter Instrument Co., Inc., Hatfield, PA,* Attorney or Agent: John F. A. Earley, Valley Forge, PA, Ex. Gp.: 3735, Requester: Edward J. Cabic, Columbia, MD

5,134,028, Re. S.N. 90/005,318, Apr. 6, 1999, Cl. 428/332, THERMOPLASTIC POLYESTER SERIES RESIN FOAMED MATERIAL AND PRODUCTION PROCESS THEREOF, Motoshige Hayashi, et. al., Owner of Record: *Sekisui Kaseihin Kogyo Kabushiki, Nara, Japan,* Attorney or Agent: David T. Nikaido, Nikaido Marmelstein Murray and Oram, Washington, DC, Ex. Gp.: 1773, Requester: Martin L. Katz, Rockey Milnamow and Katz, Ltd., Chicago, IL

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
April 27, 1999
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
122,336	71/108,106	07/23/1918
122,349	71/105,480	07/23/1918
358,504	71/390,450	07/19/1938
358,506	71/392,550	07/19/1938
358,535	71/399,674	07/19/1938
358,536	71/399,693	07/19/1938
358,537	71/399,694	07/19/1938
358,562	71/401,891	07/19/1938
358,579	71/402,645	07/19/1938
358,589	71/402,785	07/19/1938
358,591	71/402,812	07/19/1938
358,594	71/402,949	07/19/1938
358,612	71/403,258	07/19/1938
358,629	71/403,492	07/19/1938
358,631	71/403,555	07/19/1938
358,632	71/403,571	07/19/1938
358,642	71/403,767	07/19/1938
358,656	71/403,951	07/19/1938
358,675	71/404,140	07/19/1938
664,564	72/024,442	07/22/1958
664,569	72/035,129	07/22/1958
664,570	72/035,951	07/22/1958
664,574	72/037,179	07/22/1958
664,592	72/035,106	07/22/1958
664,595	72/038,566	07/22/1958
664,601	72/036,299	07/22/1958
664,603	72/033,969	07/22/1958
664,605	72/037,940	07/22/1958
664,607	72/029,778	07/22/1958
664,610	72/038,232	07/22/1958
664,611	72/038,476	07/22/1958
664,628	72/005,003	07/22/1958
664,632	72/034,952	07/22/1958
664,633	72/040,022	07/22/1958
664,639	72/009,850	07/22/1958
664,645	72/030,840	07/22/1958
664,647	72/035,895	07/22/1958
664,649	72/037,254	07/22/1958
664,660	72/036,645	07/22/1958
664,665	72/037,092	07/22/1958
664,667	72/037,139	07/22/1958
664,670	72/038,681	07/22/1958
664,683	72/032,191	07/22/1958
664,684	72/032,192	07/22/1958
664,686	72/034,563	07/22/1958
664,691	72/041,812	07/22/1958
664,700	72/029,531	07/22/1958
664,705	72/038,222	07/22/1958
664,708	72/038,682	07/22/1958
664,712	72/030,760	07/22/1958
664,714	72/036,051	07/22/1958
664,728	71/694,854	07/22/1958
664,731	72/022,559	07/22/1958
664,735	72/034,240	07/22/1958
664,737	72/027,590	07/22/1958
664,738	72/027,652	07/22/1958
664,747	72/007,762	07/22/1958
664,758	72/029,535	07/22/1958
664,759	72/029,725	07/22/1958
664,770	72/035,685	07/22/1958
664,771	72/035,763	07/22/1958
664,781	72/037,583	07/22/1958
664,788	72/037,673	07/22/1958
664,789	72/037,674	07/22/1958
664,790	72/037,701	07/22/1958
664,816	72/038,024	07/22/1958
664,820	72/018,401	07/22/1958
664,827	72/037,162	07/22/1958
664,832	72/039,146	07/22/1958
664,838	72/005,037	07/22/1958
664,844	72/004,005	07/22/1958
664,845	72/017,271	07/22/1958
664,849	72/036,234	07/22/1958
664,855	72/039,625	07/22/1958
664,862	72/004,132	07/22/1958
664,868	72/006,543	07/22/1958
664,877	72/015,848	07/22/1958
1,096,364	73/119,356	07/18/1978
1,096,372	73/127,447	07/18/1978
1,096,373	73/128,524	07/18/1978
1,096,374	73/130,221	07/18/1978
1,096,378	73/141,318	07/18/1978
1,096,384	73/096,876	07/18/1978
1,096,396	73/052,063	07/18/1978
1,096,397	73/052,065	07/18/1978
1,096,398	73/078,749	07/18/1978
1,096,399	73/087,028	07/18/1978
1,096,403	73/112,836	07/18/1978
1,096,414	73/145,881	07/18/1978
1,096,416	73/147,097	07/18/1978
1,096,417	73/147,713	07/18/1978
1,096,419	73/149,527	07/18/1978
1,096,422	73/122,982	07/18/1978
1,096,426	73/127,628	07/18/1978
1,096,427	73/130,644	07/18/1978
1,096,434	73/137,547	07/18/1978
1,096,437	73/139,924	07/18/1978
1,096,438	73/141,650	07/18/1978
1,096,441	73/146,816	07/18/1978
1,096,446	73/148,012	07/18/1978
1,096,449	73/149,190	07/18/1978
1,096,454	73/104,523	07/18/1978
1,096,457	73/119,573	07/18/1978
1,096,459	73/049,683	07/18/1978
1,096,460	73/081,116	07/18/1978
1,096,462	73/099,523	07/18/1978
1,096,465	73/114,405	07/18/1978
1,096,467	73/115,528	07/18/1978
1,096,469	73/117,787	07/18/1978
1,096,470	73/121,399	07/18/1978
1,096,472	73/131,389	07/18/1978
1,096,474	73/132,951	07/18/1978
1,096,475	73/133,537	07/18/1978
1,096,477	73/141,965	07/18/1978
1,096,478	73/146,508	07/18/1978
1,096,479	73/146,597	07/18/1978
1,096,489	73/091,024	07/18/1978
1,096,490	73/098,130	07/18/1978
1,096,492	73/107,524	07/18/1978
1,096,493	73/107,525	07/18/1978
1,096,500	73/118,123	07/18/1978
1,096,501	73/120,097	07/18/1978
1,096,502	73/125,677	07/18/1978
1,096,507	73/136,229	07/18/1978
1,096,511	73/151,943	07/18/1978
1,096,513	73/155,032	07/18/1978
1,096,521	73/120,321	07/18/1978
1,096,522	73/121,694	07/18/1978
1,096,524	73/124,480	07/18/1978
1,096,527	73/150,643	07/18/1978
1,096,529	73/128,021	07/18/1978
1,096,530	73/128,569	07/18/1978

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1,096,532	73/130,196	07/18/1978
1,096,533	73/131,157	07/18/1978
1,096,535	73/133,664	07/18/1978
1,096,538	73/137,187	07/18/1978
1,096,548	73/142,740	07/18/1978
1,096,551	73/144,040	07/18/1978
1,096,552	73/144,120	07/18/1978
1,096,555	73/151,893	07/18/1978
1,096,557	73/040,254	07/18/1978
1,096,561	73/088,481	07/18/1978
1,096,562	73/092,286	07/18/1978
1,096,564	73/094,364	07/18/1978
1,096,565	73/094,374	07/18/1978
1,096,570	73/101,956	07/18/1978
1,096,575	73/109,277	07/18/1978
1,096,580	73/117,515	07/18/1978
1,096,582	73/120,519	07/18/1978
1,096,583	73/120,677	07/18/1978
1,096,589	73/123,977	07/18/1978
1,096,591	73/125,803	07/18/1978
1,096,593	73/081,081	07/18/1978
1,096,594	73/088,108	07/18/1978
1,096,598	73/108,101	07/18/1978
1,096,599	73/116,685	07/18/1978
1,096,609	73/141,212	07/18/1978
1,096,615	73/131,080	07/18/1978
1,096,618	73/141,623	07/18/1978
1,096,620	73/143,537	07/18/1978
1,096,624	73/148,355	07/18/1978
1,096,630	73/151,629	07/18/1978
1,096,633	73/071,594	07/18/1978
1,096,634	73/091,649	07/18/1978
1,096,635	73/094,436	07/18/1978
1,096,645	73/136,811	07/18/1978
1,096,647	73/143,767	07/18/1978
1,096,653	73/061,014	07/18/1978
1,096,654	73/073,683	07/18/1978
1,096,656	73/107,405	07/18/1978
1,096,657	73/113,539	07/18/1978
1,096,662	73/125,137	07/18/1978
1,096,670	73/128,013	07/18/1978
1,096,678	73/097,813	07/18/1978
1,096,690	73/112,927	07/18/1978
1,096,692	73/114,539	07/18/1978
1,096,695	73/115,805	07/18/1978
1,096,703	73/122,773	07/18/1978
1,096,704	73/123,694	07/18/1978
1,096,706	73/124,902	07/18/1978
1,096,707	73/124,903	07/18/1978
1,096,718	73/135,375	07/18/1978
1,096,727	73/137,905	07/18/1978
1,096,733	73/141,794	07/18/1978
1,096,735	73/141,987	07/18/1978
1,096,743	73/143,872	07/18/1978
1,096,747	73/144,804	07/18/1978
1,096,748	73/144,992	07/18/1978
1,096,751	73/143,375	07/18/1978
1,096,753	73/143,489	07/18/1978
1,096,757	73/143,781	07/18/1978
1,096,759	73/144,302	07/18/1978
1,096,763	73/103,362	07/18/1978
1,096,764	73/108,124	07/18/1978
1,096,765	73/108,126	07/18/1978
1,096,772	73/122,931	07/18/1978
1,096,773	73/123,126	07/18/1978
1,096,774	73/124,163	07/18/1978
1,096,777	73/146,702	07/18/1978
1,096,779	73/152,049	07/18/1978
1,096,784	73/111,886	07/18/1978
1,096,789	73/144,107	07/18/1978
1,096,792	73/094,414	07/18/1978
1,096,797	73/128,709	07/18/1978
1,096,800	73/139,063	07/18/1978
1,096,801	73/145,891	07/18/1978
1,096,803	73/147,900	07/18/1978
1,096,809	73/099,166	07/18/1978
1,096,812	73/144,472	07/18/1978
1,096,821	73/098,547	07/18/1978
1,096,824	73/105,430	07/18/1978
1,096,827	73/114,425	07/18/1978
1,096,829	73/119,224	07/18/1978
1,096,832	73/122,382	07/18/1978
1,096,833	73/125,761	07/18/1978
1,096,835	73/132,575	07/18/1978
1,096,837	73/142,866	07/18/1978
1,096,843	73/126,609	07/18/1978
1,096,844	73/126,610	07/18/1978
1,096,846	73/116,632	07/18/1978
1,096,850	73/148,396	07/18/1978
1,096,852	73/108,392	07/18/1978
1,096,856	73/114,047	07/18/1978
1,096,857	73/115,321	07/18/1978
1,096,861	73/124,830	07/18/1978
1,096,862	73/124,879	07/18/1978
1,096,879	73/144,778	07/18/1978
1,096,880	73/144,779	07/18/1978
1,096,882	73/146,310	07/18/1978
1,096,889	73/057,550	07/18/1978
1,096,890	73/092,655	07/18/1978
1,096,891	73/105,279	07/18/1978
1,096,894	73/116,281	07/18/1978
1,096,896	73/117,223	07/18/1978
1,096,898	73/133,856	07/18/1978
1,096,900	73/137,401	07/18/1978
1,096,901	73/138,129	07/18/1978
1,096,903	73/026,561	07/18/1978
1,096,905	73/111,648	07/18/1978
1,096,906	73/111,399	07/18/1978
1,096,908	73/115,887	07/18/1978
1,096,909	73/120,986	07/18/1978
1,096,913	73/134,678	07/18/1978
1,096,922	73/149,370	07/18/1978
1,096,925	73/116,280	07/18/1978
1,096,929	73/121,453	07/18/1978
1,096,930	73/079,743	07/18/1978
1,096,931	73/079,878	07/18/1978
1,096,938	73/099,493	07/18/1978
1,096,939	73/099,494	07/18/1978
1,096,940	73/099,495	07/18/1978
1,096,941	73/099,496	07/18/1978
1,096,942	73/099,497	07/18/1978
1,096,943	73/099,498	07/18/1978
1,096,944	73/099,499	07/18/1978
1,096,947	73/114,180	07/18/1978
1,096,949	73/120,556	07/18/1978
1,096,953	73/138,954	07/18/1978
1,096,956	73/104,919	07/18/1978
1,096,957	73/112,470	07/18/1978
1,096,961	73/126,716	07/18/1978
1,096,968	73/076,099	07/18/1978
1,096,973	73/113,206	07/18/1978
1,096,976	73/128,718	07/18/1978
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1,096,989	73/088,695	07/18/1978
1,096,991	73/059,330	07/18/1978
1,096,996	73/105,946	07/18/1978
1,097,001	73/122,343	07/18/1978
1,097,008	73/055,741	07/18/1978
1,097,010	73/081,452	07/18/1978
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1,097,017	73/117,376	07/18/1978
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1,097,019	73/120,208	07/18/1978
1,097,021	73/122,035	07/18/1978
1,097,024	73/125,525	07/18/1978
1,097,030	73/132,493	07/18/1978
1,097,035	73/138,046	07/18/1978
1,097,037	73/146,372	07/18/1978
1,097,039	73/147,570	07/18/1978
1,097,040	73/147,923	07/18/1978
1,097,041	73/148,301	07/18/1978
1,097,043	73/149,617	07/18/1978
1,097,048	73/141,450	07/18/1978
1,097,057	73/115,398	07/18/1978

Notice Regarding Technical Center Box Issue Fee Mailings

The Office will begin mailing address labels with the PTOL-85, "Notice of Allowance and Issue Fee Due" for patent applications allowed in all Technology Centers. These address labels should be used to ensure proper routing of post-allowance correspondence. This directive supersedes the "Special Boxes for Patent Mail" instruction. Any Notice of Allowance and Issue Fee Due received without the accompanying address labels should continue to be addressed to Box Issue Fee.

March 11, 1998

NICHOLAS P. GODICI
Deputy Assistant Commissioner for Patents (Acting)

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Parts 1, 2, 3 and 6

[Docket No. 990401084-9084-01]

RIN 0651-AB00

TRADEMARK LAW TREATY IMPLEMENTATION ACT CHANGES

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice of proposed rulemaking; Notice of hearing.

SUMMARY: The Patent and Trademark Office (Office) proposes to amend its rules to implement the Trademark Law Treaty Implementation Act of 1998 (TLTIA), Pub. L. No. 105-330, 112 Stat. 3064 (15 U.S.C. 1051), and to otherwise simplify and clarify procedures for registering trademarks, and for maintaining and renewing trademark registrations.

DATES: Comments must be received by June 25, 1999, to ensure consideration. A public hearing will be held at 10:00 am, June 10, 1999, in the South Tower Building, 1st floor, 2900 Crystal Drive, Arlington, Virginia 22202-3513. Submit requests to present oral testimony on or before June 3, 1999.

ADDRESSES: Mail comments to the Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Virginia 22202-3513, attention Mary Hannon; fax comments to (703) 308-9395, attention Mary Hannon; or email comments to tltia.comments@uspto.gov. Copies of all comments will be available for public inspection in Suite 10B10, South Tower Building, 10th floor, 2900 Crystal Drive, Arlington, Virginia 22202-3513, from 8:30 a.m. until 5:00 p.m., Monday through Friday.

FOR FURTHER INFORMATION CONTACT: Mary Hannon, Office of Assistant Commissioner for Trademarks, (703) 308-8910, ext. 37.

SUPPLEMENTARY INFORMATION:

TLTIA implements the Trademark Law Treaty (TLT). The purpose of TLT is to make the procedural requirements of the different national trademark offices more consistent.

TLTIA was enacted October 30, 1998. Title I of TLTIA, which contains the provisions that implement the treaty, will become effective October 30, 1999.

References below to "the Act," "the Trademark Act" or "the statute" refer to the Trademark Act of 1946, as amended, 15 U.S.C. 1051 *et seq.* "TMEP" is the *Trademark Manual of Examining Procedure* (2nd ed., Rev. 1.1, August 1997).

Application Filing Dates

TLTIA §103 adds §§1(a)(4) and 1(b)(4) of the Act to give the Office authority to establish and change filing date requirements. The Office proposes to eliminate several of the current minimum requirements necessary to receive a filing date. The goal is to make it easier for applicants to obtain filing dates, but also to ensure that the Office has enough information to begin examination, and to provide third parties who search Office records with accurate information about pending applications.

The Office proposes the following minimum filing requirements for granting a filing date: (1) the name of the applicant; (2) a name and address for correspondence; (3) a clear drawing of the mark; (4) a list of the goods or services; and (5) the filing fee for at least one class of goods or services.

Section 44(e) of the Act, as amended, no longer requires that a certified copy of the foreign registration accompany an application based on §44(e). The Office proposes to require submission of the foreign certificate before the mark is published for opposition or approved for registration on the Supplemental Register.

The Office also proposes to eliminate the current filing date requirements for an allegation of the applicant's use or bona fide intention to use the mark in commerce; for a specimen, and date of first use in commerce in a §1(a) application; and for a signature. These elements will be required before the mark is published for opposition or approved for registration on the Supplemental Register.

Bulky Specimens

Proposed §2.56(d)(1) requires that specimens be flat and no larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.) long. This is consistent with current §2.56. The Office proposes to add §2.56(d)(2), stating that if an applicant submits a specimen that exceeds the size requirement (a "bulky specimen"), the Office will create a facsimile of the specimen that meets the requirements of the rule (i.e., is flat and no larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.) long), insert it in the application file wrapper, and destroy the original bulky specimen.

Currently, when an applicant submits a specimen that does not conform to the requirements of §2.56 (i.e., is not flat, exceeds the size limitation, etc.), the Office retains the specimen even though it is impossible to attach it to the application file wrapper. This requires substantial special handling because the Office must store and track the specimens separately from the application file wrappers. Because the number of newly filed applications has increased from approximately 83,000 to over 233,000 per year over the past ten years, and the number of pending applications has increased from less than 100,000 to over 350,000 in the same period, it has become increasingly difficult to ensure that the bulky specimens follow the application files. As the number of applications has increased, bulky materials submitted as specimens have also increased, requiring an increased use of limited resources to handle the bulky materials. Further, because specimens of this nature are often misplaced or lost during examination processing, the Office must then require new specimens, slowing examination and inconveniencing applicants.

Because the requirement for flat specimens can be easily satisfied through the use of photographs, photocopies, or other means of reproduction, the Office will no longer retain bulky materials submitted as specimens. In very limited circumstances, the Office will continue to accept specimens consisting of videotapes, audiotapes, CDs, computer diskettes, and similar materials where there are no non-bulky alternatives, and the submission is the only means available for showing use of the mark.

Number of Specimens Required

The Office proposes to amend §§2.56(a), 2.76(b)(2), 2.86(b), and 2.88(b)(2) to require one rather than three specimens with an application under §1 of the Act, or an amendment to allege use or statement of use of a mark in an application under §1(b) of the Act. The Office previously required three specimens so that an interested party, such as a potential opposer, could permanently remove a specimen from an application file, yet not leave the file without specimens. TMEP §905.01. However, multiple copies of specimens are no longer necessary because the public may make photocopies of a single specimen.

Person Who May Sign Verified Statement

Currently, §§1(a)(1)(A) and 1(b)(1)(A) of the Act require that an application by a juristic applicant be signed "by a member of the firm or an officer of the corporation or association applying." TLTIA §103 amends §§1(a) and 1(b) of the Act to eliminate the specification of the appropriate person to sign on behalf of an applicant. The legislative history states:

> Under the existing provision, the Patent and Trademark Office has been limited to accepting, for example, only the signature of an officer of a corporation on an application when another corporate manager's signature would be appropriate because the corporate manager has specific knowledge of the facts asserted in the application. The unnecessary rigidity of the existing provision has worked a hardship on applicants who have been denied filing dates because the person verifying their application has not met the strict requirement of being an officer of the corporate applicant. Additionally, the Patent and Trademark Office has had difficulty applying the officer requirement to foreign juristic entities whose managers are not clearly officers under the United States corporate standards.

HR. Rep. No. 194, 105th Cong., 1st Sess. 12 (1997).

Proposed §§2.33(a)(2), 2.76(b)(1), 2.88(b)(1), 2.89(a)(3), and 2.89(b)(3) require that a person properly authorized to sign on behalf of the applicant sign the verification. Proposed §2.33(a)(2) states that a person who is properly authorized to sign on behalf of the applicant includes a person with legal authority to bind the applicant and/or a person with firsthand knowledge and actual or implied authority to act on behalf of the applicant.

The same principles apply to the verification of an affidavit or declaration of continued use or excusable nonuse under §8 of the Act. Proposed §2.161(b) requires that a person properly authorized to sign on behalf of the owner sign the verification. Proposed §2.161(b)(2) states that a person who is properly authorized to sign on behalf of the owner includes a person with legal authority to bind the owner and/or a person with firsthand knowledge and actual or implied authority to act on behalf of the owner.

Filing by Owner

Although TLTIA amends the statute to eliminate the specification of the proper party to sign on behalf of an applicant or registrant, the statute still requires that the owner of the mark file an application for registration, amendment to allege use, statement of use, request for extension of time to file a statement of use, and §8 affidavit. See sections 1(a)(1), 1(b)(1), 1(d)(1), 1(d)(2), and 8(b) of the Act.

TLTIA §105 amends §8 of the Act to require that the owner of the mark file an affidavit of continued use or excusable nonuse within the time period set forth in §8(a) of the Act. The legislative history states:

> Throughout the revised section 8, the term "registrant" has been replaced by the term "owner." The practice at the Patent and Trademark Office has been to require that the current owner of the registration file all the post-registration affidavits needed to maintain a registration. The current owner of the registration must aver to actual knowledge of the use of the mark in the subject registration. However, the definition of "registrant" in section 45 of the Act states that the "terms 'applicant' and 'registrant' embrace the legal representatives, predecessors, successors and assigns of each applicant and registrant." Therefore, use of the term "registrant" in section 8 of the Act would imply that any legal representative, predecessor, successor or assign of the registrant could successfully file the affidavits required by sections 8 and 9. To correct this situation, and to keep with the general principal [sic], as set out in section 1, that the owner is the proper person to prosecute anapplication, section 8 has been amended to state that the owner must file the affidavits required by the section.

H.R. Rep. No. 194, 105th Cong., 1st Sess. 18-19 (1997).

Therefore, the Office proposes to amend §§2.163(a) and 2.164(b) to make it clear that filing by the owner is a minimum requirement that cannot be cured after expiration of the filing period set forth in §8 of the Act.

Sections 1(a) and 1(b) of the Act require that an application for registration of a mark be filed by the owner. Therefore, the Office also proposes to add new §2.71(d), stating that although a mistake in setting out the applicant's name can be corrected, the application cannot be amended to set forth a different entity as the applicant; and that an application is void if it is filed in the name of an entity that did not own the mark as of the filing date of the application. This codifies current practice. TMEP §802.07. Huang v. Tzu Wei Chen Food Co. Ltd., 7 USPQ2d 1335 (Fed. Cir. 1988) (application filed in name of individual two days after mark was acquired by newly formed corporation held void); Accu Personnel Inc. v. Accustaff Inc., 38 USPQ2d 1443 (TTAB 1996) (application filed in name of entity that did not yet exist not void); In re Tong Yang Cement Corp., 19 USPQ2d 1689 (TTAB 1991) (application filed by joint venturer void where mark owned by joint venture); U.S. Pioneer Electronics Corp. v. Evans Marketing, Inc., 183 USPQ 613 (Comm'r Pats. 1974) (misidentification of applicant's name may be corrected).

The Office also proposes to amend §§2.88(e)(3), 2.89(a)(3), and 2.89(b)(3) to state that if a statement of use or request for an extension of time to file a statement of use is unsigned or signed by the wrong party, a substitute verification must be submitted before the expiration of the statutory period for filing the statement of use. This is consistent with current practice. See TMEP §§1105.05(f)(i)(A) and 1105.05(d). Sections 1(d)(1) and (2) of the Act require verification by the owner within the statutory period for filing the statement of use. Therefore, the Office cannot extend or waive the deadline for filing the verification. In re Kinsman, 33 USPQ2d 1057 (Comm'r Pats. 1993).

Revival of Abandoned Applications

TLTIA §§103 and 104 amend §§1(d)(4) and 12(b) of the Act to permit the revival of an abandoned application where the delay in responding to an Office action or notice of allowance is "unintentional." Currently, an abandoned application can be revived only if the delay was "unavoidable," a much stricter standard. The "unavoidable delay" standard has been removed from the statute. See the discussion below of the proposed amendments to §2.66 for the requirements for filing a petition to revive.

Post Registration

Statutory Changes

TLTIA §§105 and 106 amend: (1) §8 of the Act, 15 U.S.C. 1058, to add a requirement for filing an affidavit or declaration of continued use or excusable nonuse (§8 affidavit) in the year before the end of every ten-year period after the date of registration; and (2) §9 of the Act, 15 U.S.C. 1059, to delete the requirement for a declaration of continued use or excusable nonuse in a renewal application. Thus, every tenth year, the owner of a registration must file both a §8 affidavit and a renewal application.

The statutory filing periods for the ten-year §8 affidavits are the same as the statutory filing periods for the renewal applications. The Office will create a combined "Section 8 and 9" form to make it easy to make both filings in a single document. In substance, the requirements of the combined filing under amended §§8 and 9 will be the same as the requirements for renewal under current law.

A §8 affidavit between the fifth and sixth year after the date of registration is also required. This is consistent with current law. No renewal application will be required during the sixth year.

TLTIA §§105 and 106 amend §§8 and 9 of the Act to permit filing within a six-month grace period after the end of the statutory filing period, with an additional surcharge.

TLTIA §§105 and 106 also amend §§8 and 9 to allow for the correction of deficient filings after the statutory filing period expires, with payment of an additional surcharge. The amended Act does not define deficiency or place any limits on the type of deficiency or omission that can be cured after expiration of the statutory filing period. The Commissioner has broad discretion to establish procedures and fees for curing deficiencies or omissions.

Fee Changes

The Office proposes to decrease the renewal fee from $300 to $200 per class.

As a result of increased administrative costs, the Office proposes to increase the filing fees for §8 affidavits and for §15 affidavits from $100 to $200 per class.

The proposed surcharge for filing a §8 affidavit or §9 renewal application during the grace period is $100 per class. This is consistent with the current renewal grace period fee.

The proposed surcharge for correcting a deficiency in a §8 affidavit or a §9 renewal application is $100. Sections 8(c)(2) and 9(a) of the Act require a surcharge for correcting deficiencies.

Recording Assignments and Changes of Name

Currently, the Office will record only an original document or a true copy of an original. TLTIA §107 amends §10 of the Act to allow recordation of a document that is not an original or a true copy.

Assignment of §1(b) Applications

TLTIA §107 amends §10 to permit an assignment after the applicant files an amendment to allege use under §1(c) of the Act. Currently, a §1(b) application cannot be assigned until after the filing of a statement of use under §1(d) of the Act, except to a successor to the applicant's business, or the portion of the business to which the mark pertains. This amendment corrects an oversight in the Trademark Law Revision Act of 1988 (Title I of Pub. Law. No. 100-667, 102 Stat. 3935 (15 U.S.C. 1051)), which amended §10 of the Act to permit an assignment of a §1(b) application to someone other than a successor to the applicant's business only after the filing of a statement of use under §1(d) of the Act. The substance of statements of use and amendments to allege use are the same, and the only difference is the time of filing, so there is no reason to treat them differently.

Discussion of Specific Rules Changed or Added

The Office proposes to amend rules 1.1, 1.4, 1.5, 1.6, 1.23, 2.1, 2.6, 2.17, 2.20, 2.21, 2.31, 2.32, 2.33, 2.34, 2.35, 2.37, 2.38, 2.39, 2.45, 2.51, 2.52, 2.56, 2.57, 2.58, 2.59, 2.66, 2.71, 2.72, 2.76, 2.86, 2.88, 2.89, 2.101, 2.111, 2.146, 2.151, 2.155, 2.156, 2.160, 2.161, 2.162, 2.163, 2.164, 2.165, 2.166, 2.167, 2.168, 2.173, 2.181, 2.182, 2.183, 2.184, 2.185, 2.186, 3.16, 324, 3.25, 3.28, 3.31, and 6.1.

The Office proposes to revise §1.1(a)(2) to set forth all the addresses for filing trademark correspondence in one rule.

The Office proposes in §1.1(a)(2)(i) to exempt papers filed electronically from the requirement that correspondence be mailed to the street address of the Office.

The Office proposes to state in §1.1(a)(2)(v) that an applicant may transmit an application for trademark registration electronically, but only if the applicant uses the Office's electronic form.

The Office proposes to amend §1.4(a)(2) to correct a cross-reference.

The Office proposes to add a new §1.4(d)(1)(iii) to provide for signature of electronically transmitted trademark filings, where permitted.

The Office proposes to amend §1.5(c) to clarify the requirements for identifying trademark applications and registrations.

The Office proposes to amend §1.6(a) to provide that the Office will consider trademark-related correspondence transmitted electronically to have been filed on the date of transmission, regardless of whether that date is a Saturday, Sunday, or Federal holiday within the District of Columbia. This is consistent with the treatment of correspondence filed as Express Mail with the United States Postal Service under §1.10.

The Office proposes to amend §1.23 to allow payments for electronic applications and other electronic submissions authorized by the Office by a credit card identified on the electronic form.

The Office proposes to revise §2.1 to update a cross-reference.

The Office proposes to amend §2.6(a)(5) to decrease the filing fee for a renewal application from $300 to $200 per class.

The Office proposes to amend §2.6(a)(6) to delete reference to the three-month renewal grace period. TLTIA changes the grace period to six months.

The Office proposes to amend §2.6(a)(12) to increase the fee for filing a §8 affidavit from $100 to $200 per class, due to increased administrative costs.

The Office proposes to revise §2.6(a)(13) to increase the fee for filing a §15 affidavit from $100 to $200 per class, due to increased administrative costs.

The Office proposes to remove §2.6(a)(14) because it is unnecessary. The cost of a combined affidavit or declaration under §88 and 15 of the Act is the sum of the cost of the individual filings.

The Office proposes to add new §2.6(a)(14) requiring a $100 surcharge per class for filing a §8 affidavit during the grace period.

The Office proposes to amend §2.6(a)(19) to increase the fee for filing a request to divide an application from $100 to $300 per new application created. The Office believes that a $300 fee reflects the extensive amount of work required to process a request to divide.

The Office proposes to add new §2.6(a)(20), requiring a $100 surcharge for correcting a deficiency in a §8 affidavit. Amended §8(c)(2) of the Act requires a deficiency surcharge.

The Office proposes to add new §2.6(a)(21), requiring a $100 surcharge for correcting a deficiency in a renewal application. Section 9(a) of the Act, as amended, requires a deficiency surcharge.

The Office proposes to add new §2.17(c), stating that to be recognized as a representative in a trademark case, an attorney as defined in §10.1(c) may file a power of attorney, appear in person, or sign a paper on behalf of an applicant or registrant that is filed with the Office. This codifies current practice.

The Office proposes to add new §2.17(d), stating that someone may file a power of attorney that relates to more than one trademark application or registration, or to all existing and future applications and registrations; and that someone relying on a power of attorney concerning numerous applications or registrations must: (1) include a copy of the previously filed power of attorney; or (2) refer to the previously filed power of attorney, specifying: the filing date; the application serial number, registration number, or *inter partes* proceeding number for which the original power of attorney was filed; and the name of the party who signed the power of attorney; or, if the application serial number is not known, submit a copy of the application or a copy of the mark, and specify the filing date.

The Office proposes to revise §2.20 to delete the requirement for a declaration by a "member of the firm or an officer of the corporation or association," because this requirement has been deleted from §§1(a) and 1(b) of the Act.

The Office proposes to revise §2.21, listing the minimum requirements for receipt of an application filing date. The proposed minimum filing requirements are: (1) the name of the applicant; (2) a name and address for correspondence; (3) a clear drawing of the mark; (4) an identification of goods or services; and (5) the filing fee for at least one class of goods or services.

The Office proposes to delete the following minimum requirements for receiving a filing date: a stated basis for filing; a verification or declaration signed by the applicant; an allegation of use in commerce, specimen, and date of first use in commerce in an application under §1(a) of the Act; an allegation of the applicant's bona fide intention to use the mark in commerce in an application under §1(b) or §44 of the Act; a claim of priority in an application under §44(d) of the Act; and a certified copy of a foreign registration in an application under §44(e) of the Act. A claim of priority under §44(d) must be filed before the end of the priority period. All other elements must be provided before the mark is published for opposition or approved for registration on the Supplemental Register.

The Office proposes to require in §2.21(a)(3) a "clear drawing of the mark" rather than the drawing "substantially meeting all the requirements of §2.52" that is now required.

The Office proposes to state in §2.21(b) that the Office "may" rather than "will" return the papers and fees to the applicant when an application does not meet the minimum filing requirements. A new procedure is being considered under which the Office would retain applications that do not meet the minimum filing requirements. Applicants would have an opportunity to supply the missing element and receive a filing date as of the date the Office receives the missing element. Until a new policy is announced, the Office will continue to return the papers and fees to the applicant.

The Office proposes to delete the center heading "THE WRITTEN APPLICATION" before §2.31 because it is unnecessary. The heading "APPLICATION FOR REGISTRATION," immediately before §2.21, encompasses the rules that now fall under the heading "THE WRITTEN APPLICATION."

The Office proposes to remove and reserve §2.31, and to move the substance of the requirement that the application be in English to §2.32(a).

The Office proposes to change the heading of §2.32 to "Requirements for written application," and to revise the rule. Proposed §2.32(a) lists the requirements for the written application, now listed in §2.33(a)(1).

Proposed §2.32 does not require a statement of the applicant's method or intended method of use of the mark, because §§1(a) and 1(b) of the Act, as amended, no longer require that applicants state the mode or manner in which a mark is used.

The Office proposes to change the heading of §2.33 to "Verified statement" and revise the rule.

The Office proposes to revise §2.33(a) to state that the application must include a statement that is signed and verified (sworn to) or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant. The proposed rule further states that a person who is properly authorized to sign on behalf of the applicant includes a person with legal authority to bind the applicant and/or a person with first-hand knowledge and actual or implied authority to act on behalf of the applicant.

The Office proposes to move the substance of §2.32(b) to §2.33(c), and revise it to state that the Office may require a substitute verification of the applicant's continued use *or* bona fide intention to use the mark when the applicant does not file the verified statement within a reasonable time after the date it is signed. This codifies present practice. Section 2.32(b) now states only that a verification of the applicant's continued *use* of the mark is required where the application is not filed within a reasonable time after it is signed. However, the Office also requires verification of the applicant's continued *bona fide intention to use* the mark in commerce when a verification under §1(b) or §44 of the Act is not filed within a reasonable time after it is signed. TMEP §803.04.

The Office proposes to add §2.33(d), stating that where an electronically transmitted filing is permitted, the person who signs the verified statement must either: (1) place a symbol comprised of numbers and/or letters between two forward slash marks in the signature block on the electronic document; and print, sign and date in permanent ink, and maintain a paper copy of the electronic submission; or (2) use some other form of electronic signature that the Commissioner may designate.

Proposed §2.33(d)(1) states that applicants who submit electronic documents must sign and date in permanent ink, and maintain a verified statement confirming that the signatory has adopted the symbol shown in the signature block to verify the contents of the document, and that the information in the electronic submission is identical to the information in the paper copy of the submission.

The Office proposes to add new §2.34, "Bases for filing." Currently, an applicant must establish a basis for filing to receive a filing date. Under the proposed new rules, a stated filing basis will no longer be included as one of the minimum requirements for receipt of a filing date. If missing, it must be provided before the mark is published for opposition or approved for registration on the Supplemental Register.

The Office proposes that the requirements for each of the four bases be moved from §2.21(a)(5) to §2.34(a). Section 2.34(a)(1) will list the requirements for an application under §1(a) of the Act, now listed in §§2.21(a)(5)(i), 2.33(a)(1)(iv), 2.33(a)(1)(vii), 2.33(a)(2), and §2.33(b)(1). Section 2.34(a)(2) will list the requirements for an application under §1(b) of the Act, now listed in §§2.21(a)(5)(iv) and 2.33(a)(1)(iv).

Section 2.34(a)(3) will list the requirements for an application under §44(e) of the Act, now listed in §§2.21(a)(5)(ii) and 2.33(a)(1)(viii). Section 2.34(a)(3)(ii) will require a certified copy of a foreign registration. Currently, a §44(e) applicant must submit a foreign certificate to receive a filing date. However, TLTIA §108 amends §44(e) of the Act to delete the requirement that the application be "accompanied by" the foreign certificate. The Office proposes to require that the applicant submit the certificate before the mark is published for opposition or approved for registration on the Supplemental Register.

The Office proposes to add §2.34(a)(3)(iii), stating that if it appears that the foreign registration will expire before the mark in the United States application will register, the applicant must submit a certification from the foreign country's trademark office, showing that the registration has been renewed and will be in force at the time the United States registration will issue. This codifies current practice. TMEP §1004.03.

The Office proposes that §2.34(a)(4) will list the requirements for an application under §44(d) of the Act, now listed in §§2.21(a)(5)(iii), 2.33(a)(1)(ix), and 2.39. Proposed §2.34(a)(4)(i) requires that a priority claim be filed within six months of the filing date of the foreign application. This is consistent with Articles 4(C)(1) and 4(D)(1) of the Paris Convention for the Protection of Industrial Property, as revised at Stockholm on July 14, 1967 (Paris Convention).

The Office proposes to state in §2.34(b)(1) that an applicant may claim more than one basis, provided that the applicant meets the requirements for all bases claimed. This codifies current practice. The Office also proposes to state that the applicant may not claim both §§1(a) and 1(b) for the identical goods or services in one application. In §2.34(b)(2), the Office proposes to require that the applicant specify which basis covers which goods or services when an applicant claims more than one basis.

In §2.34(c), the Office proposes to set forth the definition of "commerce" currently found in §2.33(a)(3).

The Office proposes to remove §2.37.

The Office proposes to redesignate §2.35 as §2.37.

The Office proposes to add new §2.35, "Adding, deleting, or substituting bases."

The Office proposes to state in §2.35(a) that the applicant may add or substitute a basis for registration before publication, and that the applicant may delete a basis at any time.

The Office proposes to state in §2.35(b) that the applicant cannot amend an application to add or substitute a basis after publication. This changes practice. Prior to 1995, the Office did not accept amendments adding or substituting a basis for registration after publication. This policy was changed by In re Monte Dei Maschi Di Siena, 34 USPQ2d 1415 (Comm'r Pats. 1995). Currently, the Office will accept an amendment to add or substitute a basis for registration after publication if the applicant files a petition to the Commissioner; republication is required. TMEP §1006.04.

After three years of experience, the Office does not believe that accepting these amendments is in the public interest, because the amendments reopen examination. This delays later-filed conflicting applications, which must be suspended indefinitely until the earlier-filed application is either registered or abandoned. Therefore, the Office proposes to prohibit amendments that add or substitute a basis after publication.

The Office proposes to state in §2.35(c) that when the applicant substitutes a basis, the Office will presume that the original basis was valid, unless there is contradictory evidence in the record, and the application will retain the original filing date.

Under present practice, if the applicant changes the basis from §1(a) or §1(b) to §44(e), or from §44(e) to either §1(a) or §1(b), the applicant retains the original filing date. However, if an application is filed solely under §44(d), and the applicant amends to substitute a different basis after the expiration of the six-month priority period, the effective filing date of the application becomes the date the applicant perfects the amendment claiming the new basis. TMEP §1006.03.

The Office proposes to change this practice, to allow a §44(d) applicant to retain the priority filing date when the applicant substitutes a new basis after the expiration of the six-month priority period.

The Office proposes to state in §2.35(d) that if an applicant properly claims a §44(d) basis in addition to another basis, the applicant will retain the priority filing date under §44(d) no matter which basis the applicant perfects. This codifies current practice. TMEP §1006.01.

The Office proposes to state in §2.35(e) that the applicant may add or substitute a §44(d) basis only within the six-month priority period following the filing date of the foreign application. This is consistent with current practice (TMEP §1006.05), and with Articles 4(C)(1) and 4(D)(1) of the Paris Convention.

In §2.35(f), the Office proposes to state that an applicant who adds a basis must state which basis covers which goods or services.

The Office proposes to state in §2.35(g) that if an applicant deletes a basis, the applicant must also delete any goods or services covered solely by the deleted basis. This codifies current practice.

The Office proposes to state in §2.35(h) that once an applicant claims a §1(b) basis as to any or all of the goods or services, the applicant may not amend the application to seek registration under §1(a) of the Act for those goods or services unless the applicant files an allegation of use under §1(c) or §1(d) of the Act.

The Office proposes to amend §2.38(a) to update a cross-reference.

The Office proposes to remove and reserve §2.39, and to move the requirements for filing a priority claim under §44(d) of the Act to §2.34(a)(4), discussed above.

The Office proposes to revise §§2.45(a) and (b) to: (1) delete the requirement for a statement of the method or intended method of use in a certification mark application; and (2) require a copy of the standards that determine whether others may use the certification mark on their goods and/or in connection with their services. Sections 1(a) and 1(b) of the Act, as amended, no longer require a statement of the method or intended method of use of a mark. The requirement for a copy of the certification standards codifies current practice. TMEP §1306.06(g)(ii).

The Office proposes to remove §§2.5 1(c) through (e), and move the substance of those rules to §2.52.

The Office proposes to revise §2.52(a) to define the term "drawing," to indicate that a drawing may only depict a single mark, and to define the terms "typed drawing" and "special form drawing."

The Office proposes to add guidelines in §2.52(a) for drawings of various types of unusual marks, such as marks that include color, three-dimensional objects, motion, sound or scent; and to add guidelines for showing placement of the mark on goods, packaging for goods, or in advertising of services.

The Office proposes to indicate the recommended format for the drawing of a mark in §2.52(b).

The Office proposes to revise §2.52(c) to state that for an electronically filed application, if the mark cannot be shown as a "typed drawing," the applicant must attach a digitized image of the mark to the application.

The Office proposes to consolidate §§2.56, 2.57 and 2.58 into §2.56, and to remove and reserve §§2.57 and 2.58.

The Office proposes to revise §2.56(a) to require one rather than three specimens with an application under §1(a) of the Act, or an allegation of use under §1(c) or §1(d) of the Act in an application under §1(b) of the Act. See the discussion above under "Supplementary Information/Number of Specimens Required."

The Office proposes to add §2.56(b)(1), stating that a trademark specimen is a label, tag, or container for the goods, or a display associated with the goods; and that the Office may accept another document related to the goods or the sale of the goods when it is not possible to place the mark on the goods or packaging for the goods. This is consistent with the current §2.56.

The Office proposes to add §2.56(b)(2), stating that a service mark specimen must show the mark as actually used in the sale or advertising of the services. This is consistent with the current §2.58(a).

The Office proposes to add §2.56(b)(3), stating that a collective trademark or collective service mark specimen must show how a member uses the mark on the member's goods or in the sale or advertising of the member's services. This codifies current practice. TMEP §1303.02(b).

The Office proposes to add §2.56(b)(4), stating that a collective membership mark specimen must show use by members to indicate membership in the collective organization. This codifies current practice. TMEP §1304.09(c).

The Office proposes to add §2.56(b)(5), stating that a certification mark specimen must show how a person other than the owner uses the mark to certify regional or other origin, material, mode of manufacture, quality, accuracy, or other characteristics of the person's goods or services; or that members of a union or other organization performed the work or labor on the goods or services. This codifies current practice. TMEP §1306.06(c).

The Office proposes to add §2.56(c), stating that a photocopy or other reproduction of a specimen is acceptable, but that a photocopy or facsimile that merely reproduces the drawing is not a proper specimen. This is consistent with the current §2.57.

Proposed new §2.56(d)(1) states that a specimen must be flat and no larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.) long. This is consistent with the current §2.56.

The Office proposes to add §2.56(d)(2), stating that if the applicant files a specimen that is too large (a "bulky specimen"), the Office will create a facsimile of the specimen that meets the requirements of the rule (i.e., is flat and no larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.) long) and put it in the file wrapper. See the discussion above under "Supplementary Information/Bulky Specimens."

The Office proposes to add §2.56(d)(4), stating that if the application is filed electronically, the specimen must be submitted as a digitized image.

The Office proposes to revise §2.59 to clarify and simplify the language.

The Office proposes to rewrite §2.66 to set forth the requirements for filing a petition to revive an abandoned application when the delay in responding to an Office action or notice of allowance is "unintentional." Currently, an applicant can revive an abandoned application only if the delay was "unavoidable," a much stricter standard. TLTIA §§103 and 104 amend §§1(d)(4) and 12(b) of the Act to permit an application to be revived if the delay is "unintentional." The "unavoidable delay" standard has been removed from the statute, effective October 30, 1999.

The Office proposes to add §§2.66(a)(1) and (2), requiring that the applicant file a petition to revive within (1) two months of the mailing date of the notice of abandonment; or (2) two months of actual knowledge of abandonment. Currently, the deadline for filing a petition to revive is sixty days. TMEP §1112.05(a). The two-month deadline will make it easier to calculate the due date for a petition because it will not be necessary to count days.

The Office also proposes to state in §2.66(a)(2) that an applicant must be diligent in checking the status of an application. This codifies current practice. TMEP §§413 and 1112.05(b)(ii). The Office now denies petitions to revive when the applicant waits too long before checking the status of an application. To be diligent, the applicant must check the status of the application within one year of the last filing or receipt of a notice from the Office. Applicants can check the status of applications through the Trademark Status Line, or through the Office's World Wide Web site at www.uspto.gov. This is consistent with proposed §2.146(i), discussed below.

The Office proposes to amend §§2.66(b)(2) and (c)(2) to require "a statement, signed by someone with firsthand knowledge of the facts, that the delay ... was unintentional," rather than the "showing of the causes of the delay" that these rules now require.

The Office proposes to delete the requirement that a petition to revive include a statement that is verified or supported by a declaration under §2.20. This is unnecessary because §10.18(b), as amended effective December 1, 1997, states that any party who presents a paper to the Office is certifying that all statements are true and attesting to an awareness of the penalty for perjury. This proposed amendment is consistent with amendments to §§1.8(b)(3), 1.10(d), 1.10(e), 1. 137(a)(3), and 1.137(b)(3), also effective December 1, 1997. 62 FR 53186 (Oct. 10, 1997).

The Office proposes to amend §2.66(b)(3) to state that if the applicant did not receive the Office action, the applicant need not include a proposed response to an Office action with a petition to revive. This codifies current practice.

The Office proposes to amend §§2.66(c)(3) and (4) to state that if the applicant did not receive the notice of allowance, the petition to revive need not include a statement of use or request for an extension of time to file a statement of use, or the fees for the extension requests that would have been due if the application had never been abandoned. This codifies current practice.

The Office proposes to add §2.66(c)(5), stating that unless a statement of use is filed with or before the petition to revive, or the petition states that the applicant did not receive the notice of allowance, the applicant must file any further requests for extensions of time to file a statement of use under §2.89 that become due while the petition is pending, or file a statement of use. This codifies current practice.

The Office proposes to add §2.66(f)(3), stating that if the Commissioner denies the petition to revive, the applicant may request reconsideration by: (1) filing the request within two months of the mailing date of the decision denying the petition; and (2) paying a second petition fee under §2.6. Currently, the rules do not specifically provide for requests for reconsideration of petition decisions, but the Commissioner has the discretion to consider these requests under §2.146(a)(3). The Office believes that an additional fee should be required to pay for the work done in processing the request for reconsideration. This is consistent with proposed §2.1460).

The Office proposes to revise §2.71 (a) to state that the applicant may amend the identification to clarify or limit, but not broaden, the identification of goods and/or services. This simplifies the language of the current §2.71(b).

Proposed §2.71(b)(1) states that if the declaration or verification of an application under §2.33 is unsigned or signed by the wrong party, the applicant may submit a substitute verification or declaration under §2.20. This changes current practice. Currently, the applicant must submit a signed verification to receive an application filing date, and if the verification is signed by the wrong party, the applicant cannot file a substitute verification unless the party who originally signed had "color of authority" (i.e., firsthand knowledge of the facts and actual or implied authority to act on behalf of the applicant). TMEP §803. As discussed above, the Office proposes to delete the requirement that the applicant submit a signed verification in order to receive a filing date. If the verification is unsigned or signed by the wrong party, the applicant must replace the declaration before the mark is published for opposition or approved for registration on the Supplemental Register.

The Office proposes to delete the requirement for a verification "by the applicant, a member of the applicant firm, or an officer of the applicant corporation or association" from §2.71(c). This is consistent with the amendments to §§1(a) and 1(b) of the Act.

The Office also proposes to delete the "color of authority" provisions from §2.71 (c). Because the statute no longer specifies who has "statutory" authority to sign, the "color of authority" provisions are unnecessary.

The Office proposes to state in §2.71 (b)(2) that if the declaration or verification of a statement of use under §2.88 or a request for extension of time to file a statement of use under §2.89 is unsigned or signed by the wrong party, the applicant must submit a substitute verification before the expiration of the statutory deadline for filing the statement of use. This is consistent with current practice and with the proposed amendments to §§2.88(e)(3), 2.89(a)(3), and 2.89(b)(3), discussed below.

The Office proposes to add new §2.71(d), stating that a mistake in setting out the applicant's name can be corrected, but the application cannot be amended to set forth a different entity as the applicant; and that an application filed in the name of an entity that did not own the mark on the filing date of the application is void. This codifies current practice. TMEP §802.07. See the discussion above under "Supplementary Information/Filing by Owner."

The Office proposes to revise §2.72 to remove paragraph (a), and redesignate paragraphs (b) through (d) as (a) through (c).

The Office proposes that new paragraphs (a) through (c) will each state that an applicant may not amend the description or drawing of the mark if the amendment materially alters the mark; and that the Office will determine whether a proposed amendment materially alters a mark by comparing the proposed amendment with the description or drawing of the mark in

the original application. These provisions are now stated in paragraph (a).

Under the current §2.72, as interpreted by In re ECCS, Inc., 94 F.3d 1578, 39 USPQ2d 2001 (Fed. Cir. 1996) and In re Dekra e.V., 44 USPQ2d 1693 (TTAB 1997), an applicant may amend an application to correct an "internal inconsistency." An application is "internally inconsistent" if the mark on the drawing does not agree with the mark on the specimens in an application based on use, or with the mark on the foreign registration in an application based on §44 of the Act.

Currently, because §§2.72(b), (c) and (d) do not expressly prohibit an amendment that materially alters the mark on the original drawing, the Office accepts amendments that correct "internal inconsistencies," regardless of whether the amendment materially alters the mark on the original drawing. TMEP §807.14(a).

The Office does not believe that it is in the public interest to accept amendments that materially alter the mark on the original drawing. When the Office receives a new application, the mark on the drawing is promptly filed in the Trademark Search Library and entered into the Office's electronic and administrative systems. Accepting an amendment that materially alters the mark on the original drawing is unfair to third parties who search Office records between the application filing date and the date the amendment is entered, because they do not have accurate information about earlier-filed applications. A third party may innocently begin using a mark that conflicts with the amended mark, but not with the original mark, relying on the search of Office records. Also, an examining attorney may approve a later-filed application for registration of a mark that conflicts with the amended mark, but not with the original mark. Therefore, the Office proposes to amend §2.72 to prohibit amendments that materially alter the mark on the original drawing.

The Office proposes to revise §2.76(b)(1) to state that a complete amendment to allege use must include a statement that is verified or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant.

The Office proposes to further revise §2.76(b)(1) to delete the requirement for a statement of the method or manner of use of the mark in an amendment to allege use, because this requirement has been removed from §§1(a) and 1(b) of the Act.

The Office proposes to revise §2.76(b)(2) to require one rather than three specimens with an amendment to allege use. See the above discussion under "Supplementary Information/ Number of Specimens Required."

The Office proposes to add new §2.76(i), stating that if an amendment to allege use is not filed within a reasonable time after it is signed, the Office may require a substitute verification or declaration under 82.20 that the mark is still in use in commerce. This codifies current practice. TMEP §803.04.

The Office proposes to add new §2.76(j), noting that the requirements for multi-class applications are stated in §2.86.

The Office proposes to change the heading of §2.86 to "Application may include multiple classes." The Office proposes to remove current §2.86(a), which states that an applicant may recite more than one item of goods, or more than one service, in a single class, if the applicant either has used or has a bona fide intention to use the mark on all the goods or services. The substance of this provision will be moved to §§2.34(a)(1)(v), 2.34(a)(2)(ii), 2.34(a)(3)(iv) and 2.34(a)(4)(iv).

The Office proposes to revise §2.86(a) to include sections now found in §2.86(b), stating that the applicant may apply to register the same mark for goods and/or services in multiple classes in a single application, provided that the applicant specifically identifies the goods and services in each class; submits a fee for each class; and either includes dates of use and one specimen, or a statement of a bona fide intention to use the mark in commerce, for each class. The Office also proposes to add in §2.86(a)(3) a provision that the applicant may not claim both use in commerce and a bona fide intention to use the mark in commerce for the identical goods or services in one application.

The Office proposes to state in §2.86(b) that a statement of use or amendment to allege use must include the required fee, dates of use, and one specimen for each class. The requirement for only one specimen is consistent with the proposed amendments to §§2.56(a), 2.76(b)(2), and 2.88(b)(2).

The Office also proposes to add to §2.86(b) a provision that the applicant may not file the statement of use or amendment to allege use until the applicant has used the mark on all the goods or services, unless the applicant files a request to divide. This is consistent with the current §§2.76(c) and 2.88(c).

The Office proposes to delete the current §2.86(c), which prohibits an applicant from claiming both use in commerce and intent-to-use in a single multi-class application. However, the Office proposes to state in §2.86(a)(3) that the applicant may not claim both use in commerce and intent-to-use for the identical goods or services in one application.

The Office proposes to move the substance of the last sentence of the current §2.86(b) to new §286(c).

The Office proposes to revise §2.88(b)(1) to state that a complete statement of use must include a statement that is verified or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant.

The Office proposes to revise §2.88(b)(1) to delete the requirement for a statement of the method or manner of use in a statement of use. This requirement has been removed from §1(d)(l) of the Act.

The Office proposes to revise §2.88(b)(2) to require one specimen with a statement of use, rather than the three specimens now required. This is consistent with the proposed amendment of §2.56(a).

The Office proposes to revise §2.88(e)(3) to state that if the verification or declaration is unsigned or signed by the wrong party, the applicant must submit a substitute verification or declaration on or before the statutory deadline for filing the statement of use. This is consistent with current practice. TMEP §1105.05(f)(i)(A). Section l(d)(1)of the Act specifically requires verification by the applicant within the statutory period for filing the statement of use.

The Office proposes to add §2.88(k), stating that if the statement of use is not filed within a reasonable time after it is signed, the Office may require a substitute verification or declaration under §2.20 stating that the mark is still in use in commerce. This codifies current practice. TMEP §803.04.

The Office proposes to add §2.88(1), noting that the requirements for multi-class applications are stated in §2.86.

The Office proposes to revise §§2.89(a)(3) and (b)(3) to require that a request for an extension of time to file a statement of use include a statement that is verified or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant; and that if the extension request is unsigned or signed by the wrong party, the applicant must submit a substitute verification or declaration on or before the statutory deadline for filing the statement of use. This is consistent with current practice. TMEP §1105.05(d). Sections l(d)(1) and (2) of the Act specifically require verification by the applicant within the statutory filing period.

The Office proposes to revise §2.89(d) to remove paragraph (1), which requires a statement that the applicant has not yet made use of the mark in commerce on all the goods and services. The Commissioner has held that an extension request that omits this allegation is substantially in compliance with §2.89(d) if the request contains a statement that the applicant has a continued bona fide intention to use the mark in commerce. In re Schering-Plough Healthcare Products Inc., 24 USPQ2d 1709 (Comm'r Pats. 1992). Therefore, the requirement is unnecessary.

The Office proposes to add §2.89(h), stating that if the extension request is not filed within a reasonable time after it is signed, the Office may require a substitute verification or declaration under §2.20 that the applicant still has a bona fide intention to use the mark in commerce. This codifies current practice. TMEP §803.04.

The Office proposes to revise §2.101(d)(1) to update a cross-reference.

The Office proposes to revise §2.111(c)(1) to update a cross-reference.

The Office proposes to revise §2.146(d) to delete "sixty days" and substitute "two months" as the deadline for filing certain petitions. This will make it easier to calculate the due date for a petition because it will not be necessary to count days.

The Office proposes to add §2.146(i), stating that where a petitioner seeks to reactivate an application or registration that was abandoned or cancelled due to the loss or mishandling of papers mailed to or from the Office, the petition will be denied if the petitioner was not diligent in checking the status of the application or registration. This codifies current practice. TMEP §§413 and 1704. Even where a petitioner can show that the Office actually received papers, or can swear that a notice from the Office was never received by the petitioner, the Office now denies the petition if the petitioner waited too long before investigating the problem. This is because third parties may rely to their detriment on the information in the records of the Office that an application is abandoned or that a registration is expired. A third party may have diligently searched Office records and begun using a mark because the search showed no earlier-filed conflicting marks, or an examining attorney may have searched Office records and approved an earlier-filed application for a conflicting mark. This is consistent with the proposed amendment of §2.66(a)(2), discussed above.

The Office proposes to add §2.146(j), stating that if the Commissioner denies the petition, the petitioner may request reconsideration by: (1) filing the request within two months of the mailing date of the decision denying the petition; and (2) paying a second petition fee under §2.6. Currently, the rules do not specifically provide for requests for reconsideration of petition decisions, but the Commissioner has the discretion to consider these requests under §2.146(a)(3). The Office believes that an additional fee should be required to pay for the work done in processing the request for reconsideration. This is consistent with proposed §2.66(f)(3), discussed above.

The Office proposes to revise §2.151 to update a cross-reference and simplify the language.

The Office proposes to revise §2.155 to update a cross-reference and simplify the language.

The Office proposes to revise §2.156 to update a cross-reference and simplify the language.

The Office proposes to add §2.160, "Affidavit or declaration of continued use or excusable nonuse required to avoid cancellation." Proposed §§2.160(a)(1) and (2) list the deadlines for filing the affidavit or declaration, and proposed §2.160(a)(3) states that the owner may file the affidavit or declaration within six months after expiration of these deadlines, with an additional grace period surcharge. Currently, there is no grace period for filing a §8 affidavit.

Proposed §2.160(b) advises that §2.161 lists the requirements for the affidavit or declaration.

The Office proposes to change the heading of §2.161 to "Requirements for a complete affidavit or declaration of continued use or excusable nonuse," and to revise §2.161 to list the proposed requirements for the affidavit or declaration.

The Office proposes to revise 2.161 (a) to state that the owner must file the affidavit or declaration within the period set forth in §8 of the Act.

The Office proposes to revise §2.161 (b) to state that the affidavit or declaration must include a verified statement that is signed and verified (sworn to) or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the owner, attesting to the continued use or excusable nonuse of the mark within the period set forth in §8 of the Act. The Office also proposes to revise §2.161(b)(2) to state that a person properly authorized to sign on behalf of the owner includes a person with legal authority to bind the owner and/or a person with firsthand knowledge and actual or implied authority to act on behalf of the owner.

The Office proposes to add §2.161(d)(2), requiring a surcharge for filing an affidavit or declaration of continued use or excusable nonuse during the grace period.

The Office proposes to add §2.161(d)(3), stating that if the fee submitted is enough to pay for at least one class, but not enough to pay for all the classes, and the particular class(es) covered by the affidavit or declaration are not specified, the Office will issue a notice requiring either the submission of additional fee(s) or an indication of the class(es) to which the original fee(s) should be applied; that additional fee(s) may be submitted if the requirements of §2.164 are met; and that if additional fees are not submitted and the class(es) to which the original fee(s) should be applied are not specified, the Office will presume that the fee(s) cover the classes in ascending order, beginning with the lowest numbered class.

Proposed §2.161 (e) requires that the affidavit or declaration list both the goods or services on which the mark is in use in commerce and the goods or services for which excusable nonuse is claimed. Currently, a list of the goods or services is not required when excusable nonuse is claimed. In re Conusa Corp., 32 USPQ2d 1857 (Comm'r Pats. 1993). However, TLTIA §105 amends §8(b)(2) of the Act to specifically require "an affidavit setting forth those goods on or in connection with which the mark is not in use."

The Office proposes to eliminate the requirement that the affidavit or declaration specify the type of commerce in which the mark is used, currently required by §2.162(e). Section 8 of the Act does not require that the affidavit or declaration list the type of commerce. Because the definition of "commerce" in §45 of the Act is "all commerce which may lawfully be regulated by Congress," the Office will presume that a registrant who states that the mark is in use in commerce is stating that the mark is in use in a type of commerce that Congress can regulate.

The Office proposes to move the substance of §2.162(f) to §2.161 (f)(2), and to revise it to add a requirement that the affidavit state the date when use of the mark stopped and the approximate date when use will resume. This codifies current practice. Office actions are often issued requiring a statement as to when use of the mark stopped and when use will resume, because this information is needed to determine whether the nonuse is excusable, within the meaning of §8 of the Act.

The Office proposes to move the substance of §2.162(e) to §2.161(g), and to revise it to state that the affidavit must include a specimen for each class of goods or services; that the specimen should be no larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.) long; and that if the applicant files a specimen that exceeds these size requirements (a "bulky specimen"), the Office will create a facsimile of the specimen that meets the requirements of the rule (i.e., is flat and no larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.) long) and put it in the file wrapper. See the discussion above under "Supplementary Information/Bulky Specimens."

The Office proposes to add §2.161(h), requiring a designation of a domestic representative if the registrant is not domiciled in the United States. This reflects §8(f) of the Act, as amended, and is consistent with current practice.

The Office proposes to move the substance of §2.163 to §2.162, and to revise it to say that the only notice of the requirement for filing the §8 affidavit or declaration of continued use or excusable nonuse is sent with the certificate of registration when it is originally issued. This merely clarifies, and does not change, current practice.

The Office proposes to move the substance of current §2.164 to the introductory text of new §2.163.

The Office proposes to state in §2.163(a) that if the owner of the registration files the affidavit or declaration within the time periods set forth in §8 of the Act, deficiencies may be corrected if the requirements of §2.164 are met.

The Office proposes to add §2.163(b), stating that a response to an examiner's Office action must be filed within six months of the mailing date, or before the end of the filing period set forth in §8(a) or §8(b) of the Act, whichever is later, or the registration will be cancelled.

The Office proposes to add §2.164, "Correcting deficiencies in affidavit or declaration." This section changes current practice. There are now some deficiencies that can be corrected after the statutory deadline for filing the affidavit or declaration, such as supplying evidence that the party who filed the affidavit or declaration was the owner of the mark as of the filing date, or submitting an additional fee. Other requirements must be satisfied before the expiration of the statutory deadline to avoid cancellation of the registration. In re Mother Tucker's Food Experience (Canada) Inc., 925 F.2d 1402, 17 USPQ2d 1795 (Fed. Cir. 1991) (allegation of use in commerce); In re Metrotech, 33 USPQ2d 1049 (Comm'r Pats. 1993) (specimen); In re Bonbons Barnier S.A., 17 USPQ2d 1488 (Comm'r Pats. 1990) (listing of goods or services).

TLTIA §105 adds §8(c)(2) of the Act to allow correction of deficiencies, with payment of a deficiency surcharge. The Act does not define "deficiency," but instead gives the Office broad discretion to set procedures and fees for correcting deficiencies.

Proposed §2.164(a)(1) states that if the owner files the affidavit or declaration within the period set forth in §8(a) or §8(b) of the Act, deficiencies can be corrected before the end of this period without paying a deficiency surcharge; and deficiencies can be corrected after the expiration of this period with payment of the deficiency surcharge.

The Office proposes to state in §2.164(a)(2) that if the owner files the affidavit or declaration during the grace period, deficiencies can be corrected before the expiration of the grace period without paying a deficiency surcharge, and after the expiration of the grace period with a deficiency surcharge.

The Office proposes to state in §2.164(b) that if the affidavit or declaration is not filed within the time periods set forth in §8 of the Act, or if it is filed within that period by someone other than the owner, the registration will be cancelled. These deficiencies cannot be cured.

Because §8(c)(2) of the Act specifically requires a deficiency surcharge, the Office proposes to require the deficiency surcharge for correcting any type of deficiency, even one that could be corrected for no fee under current law.

The Office proposes to change the heading of §2.165 to "Petition to Commissioner to review refusal"; to remove the last two sentences of the current §2.165(a)(1); and to simplify the language of the rule.

The Office proposes to remove present §2.166 because it is unnecessary. Proposed §§2.163(b) and 2.165(b) set forth the times when a registration will be cancelled.

The Office proposes to add §2.166, "Affidavit of continued use or excusable nonuse combined with renewal application," stating that an affidavit or declaration under §8 of the Act and a renewal application under §9 of the Act may be combined in a single document.

The Office proposes to revise §2.167(c) to delete the requirement that an affidavit or declaration under §15 of the Act (§15 affidavit) specify the type of commerce in which the mark is used.

The Office proposes to change the heading of §2.168 to "Affidavit or declaration under §15 combined with affidavit or declaration under §8, or with renewal application." The Office proposes to revise §2.168(a) to state that a §15 affidavit may be combined with a §8 affidavit, if the combined affidavit meets the requirements of both §§9 and 15 of the Act. The Office proposes to revise §2.168(b) to state that a §15 affidavit can be combined with a renewal application under §9 of the Act, if the requirements of both §§9 and 15 of the Act are met.

The Office proposes to revise §2.173(a) to simplify the language.

The Office proposes to revise §2.181 to indicate that renewal of a registration is subject to the provisions of §8 of the Act. This is consistent with the amendment to §9(a) of the Act.

The Office proposes to change the heading of §2.182 to "Time for filing renewal application," and to revise it to state that the renewal application must be filed within one year before the expiration date of the registration, or within the six-month grace period after the expiration date with an additional fee. This changes current practice. Section 9 of the Act now requires filing within *six months* before the expiration of the registration, or within a *three-month* grace period thereafter with a late fee.

The Office proposes to change the heading of §2.183 to "Requirements for a complete renewal application," and to revise it to delete the present renewal requirements and substitute new ones based on amended §9 of the Act. In particular, the Office proposes to delete the requirements for a specimen and declaration of use or excusable nonuse on or in connection with the goods or services listed in the registration, because these requirements have been removed from §9 of the Act. The proposed requirements for renewal are: (1) a signed request for renewal; (2) a renewal fee for each class; (3) a grace period surcharge for each class if the renewal application is filed during the grace period; (4) if the registrant is not domiciled in the United States, a designation of a domestic representative; and (5) if the renewal application covers less than all the goods or services, a list of the particular goods or services to be renewed.

The Office proposes to state in §2.183(f) that if the fee submitted is enough to pay for at least one class, but not enough to pay for all the classes, and the class(es) covered by the renewal application are not specified, the Office will issue a notice requiring either the submission of additional fee(s) or an indication of the class(es) to which the original fee(s) should be applied; that additional fee(s) may be submitted if the requirements of §2.185 are met; and that if the required fee(s) are not submitted and the class(es) to which the original fee(s) should be applied are not specified, the Office will presume that the fee(s) cover the classes in ascending order, beginning with the lowest numbered class.

The Office proposes to revise and simplify the language of current §2.184 and to transfer some of its provisions to new §2.186. The revised provisions state that the Office will issue a notice if the renewal application is not acceptable; that a response to the refusal of renewal must be filed within six months of the mailing date of the Office action, or before the expiration date of the registration, whichever is later; and that the registration will expire if the renewal application is not filed within the time periods set forth in §9(a) of the Act.

The Office proposes to add §2.185, "Correcting deficiencies in renewal application." This section changes current practice. There are now some deficiencies that can be corrected after the statutory deadline for filing the renewal application, such as supplying evidence that the party who filed the application was the owner of the registration on the filing date. Other requirements, such as the renewal fee, must be met before the end of the statutory filing period, or the registration will expire. In re Culligan International Co., 915 F.2d 680, 16 USPQ2d 1234 (Fed. Cir. 1990).

Under amended §9, the renewal application must be filed within the renewal period or grace period specified in §9(a) of the Act, or the registration will expire. However, if the renewal application is timely filed, any deficiencies may be corrected after expiration of the statutory filing period, with payment of a deficiency surcharge.

The Office proposes to state in §2.185(a)(1)that if the renewal application is filed within one year before the registration expires, deficiencies may be corrected before the registration expires without paying a deficiency surcharge, or after the registration expires with payment of the deficiency surcharge required by §9(a) of the Act.

The Office proposes to state in §2.185(a)(2) that if the renewal application is filed during the grace period, deficiencies may be corrected before the expiration of the grace period without paying a deficiency surcharge, and after the expiration of the grace period with payment of the deficiency surcharge required by §9(a) of the Act.

The Office proposes to state in §2.185(b) that if the renewal application is not filed within the time periods set forth in §9(a) of the Act, the registration will expire. This deficiency cannot be cured.

Because §9(a) of the Act specifically requires a deficiency surcharge, the Office proposes to charge the deficiency surcharge for correcting any type of deficiency, even one that could be corrected for no fee under current law.

The Office proposes to add new §2.186, "Petition to Commissioner to review refusal of renewal."

Proposed §2.186(a) states that a response to the examiner's initial refusal is required before filing a petition to the Commissioner, unless the examiner directs otherwise. This is consistent with the current §2.184(a).

Proposed §2.186(b) states that if the examiner maintains the refusal of the renewal application, a petition to the Commissioner to review the action may be filed within six months of the mailing date of the Office action maintaining the refusal; and that if no petition is filed within six months of the mailing date of the Office action, the registration will expire. This is consistent with the current §2.184(b).

Proposed §2.186(c) states that a decision by the Commissioner is necessary before filing an appeal or commencing a civil action in any court. This is consistent with the current §2.184(d).

The Office proposes to amend §3.16 to state that an applicant may assign an application based on §1(b) of the Act once the applicant files an amendment to allege use under §1(c) of the Act.

The Office proposes to change the heading of §3.24 to "Requirements for documents and cover sheets relating to patents and patent applications." The Office proposes to list the recording requirements for patents in §3.24, and to add new §3.25 listing the recording requirements for trademark applications and registrations.

Section 3.25 identifies the types of documents one can submit when recording documents that affect some interest in trademark applications or registrations. The section also identifies the Office's preferred format for cover sheets and other documents.

The Office proposes to revise §3.28 to state a preference that separate cover sheets be used for patents and trademarks.

The Office proposes to revise §3.3l(a)(4) to set forth the requirements for identifying a trademark application where the application serial number is not known.

The Office proposes to delete the requirement currently in §3.3 l(a)(9) that a cover sheet contain a statement that the information on the cover sheet is correct and that any copy of the document submitted is a true copy.

The Office proposes to amend §3.3l(b) to state that a cover sheet "should" not refer to both patents and trademarks and to put the public on notice that if a cover sheet contains both patent and trademark information, all information will become public after recordation.

The Office proposes to add §3.31(d) to state the Office's preference that a trademark cover sheet include the serial number or registration number of the trademark affected by the conveyance or transaction, an identification of the mark, and a description of the mark.

The Office proposes to add §3.3l(e) to state the Office's preference that the cover sheet include the total number of applications, registrations, or patents identified on the cover sheet and the total fee.

The Office proposes to revise §6.1 to incorporate classification changes that became effective January 1, 1997, as listed in the International Classification of Goods and Services for the Purposes of the Registration of Marks (7th ed. 1996), published by the World Intellectual Property Organization (WIPO).

Environmental, Energy, and Other Considerations

The Office has determined that the proposed rule changes have no federalism implications affecting the relationship between the National Government and the State as outlined in Executive Order 12612.

The Chief Counsel for Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy of the Small Business Administration, that the proposed rule changes will not have a significant impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). This rule implements the Trademark Law Treaty Implementation Act and simplifies and clarifies procedures for registering trademarks and maintaining and renewing trademark registrations. The rule will not significantly impact any businesses. The principal effect of the rule is to make it easier for applicants to obtain a filing date. No additional requirements are added to maintain registrations. Furthermore, this rule simplifies the procedures for registering trademarks in proposed sections 2.21, 2.32, 2.34, 2.45, 2.76, 2.88, 2.161, 2.167 and 2.183 of the Trademark rules. As a result, an initial regulatory flexibility analysis was not prepared.

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 et seq.), Executive Order 12612, and the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501 *et seq.*). The proposed changes have been determined to be not significant for purposes of Executive Order 12866.

Notwithstanding any other provision of law, no person is required to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the PRA unless that collection of information displays a currently valid OMB control number.

This rule contains collections of information requirements subject to the PRA. This rule discusses changes in the information required from the public to obtain registrations for trademarks and service marks, to submit affidavits or declarations of continued use or excusable nonuse, statements of use, requests for extensions of time to file statements of use, and to renew registrations. This rule proposes to delete requirements to identify the method of use of a mark and the type of commerce in which a mark is used.

Additionally, the rule removes the requirement that requests for recordation of documents be accompanied by originals or true copies of these documents. The rule proposes to allow for the filing of powers of attorney that pertain to multiple registrations or applications for registration, and proposes certain requirements for filing such powers of attorney. Additionally, the rule proposes requirements for submitting §8 affidavits of continued use or excusable nonuse combined with §9 renewal applications, or §15 affidavits or declarations of incontestability combined with either §8 affidavits or declarations or with §9 renewal applications.

An information collection package supporting the changes to the above information requirements, as discussed in this rule, has been submitted to OMB for review and approval. The public reporting burden for this collection of information is estimated to average as follows: seventeen minutes for applications to obtain registrations based on an intent to use the mark under §1(b) of the Act, if completed using paper forms; fifteen

minutes for applications to obtain registrations based on an intent to use the mark under §1(b) of the Act, if completed using an electronic form; twenty-three minutes for applications to obtain registrations based on use of the mark under §1(a) of the Act, if completed using paper forms; twenty-one minutes for applications to obtain registrations based on use of the mark under §1(a) of the Act, if completed using an electronic form; twenty minutes for applications to obtain registrations based on an earlier-filed foreign application under §44(d) of the Act, if completed using paper forms; nineteen minutes for applications to obtain registrations based on an earlier-filed foreign application under §44(d) of the Act, if completed using an electronic form; twenty minutes for applications to obtain registrations based on registration of a mark in a foreign applicant's country of origin under §44(e) of the Act; thirteen minutes for allegations of use of the mark under §§2.76 and 2.88; ten minutes for requests for extension of time to file statements of use under §2.89; fourteen minutes for renewal applications under §9 of the Act combined with affidavits or declarations of continued use or excusable nonuse under §8 of the Act; fourteen minutes for combined affidavits/declarations of use and incontestability under §§8 and 15 of the Act; eleven minutes for an affidavit or declaration of continued use or excusable nonuse under §8 of the Act; eleven minutes for a renewal application under §9 of the Act; eleven minutes for a declaration of incontestability under §15 of the Act; three minutes for powers of attorney and designations of domestic representatives; and thirty minutes for a trademark recordation form cover sheet. These time estimates include the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments are invited on: (1) whether the collection of information is necessary for proper performance of the functions of the agency; (2) the accuracy of the agency' s estimate of the burden; (3) ways to enhance the quality, utility, and clarity of the information to be collected; and (4) ways to minimize the burden of the collection of information to respondents.

This rule also involves information requirements associated with amendments, oppositions, and petitions to cancel. The amendments and the oppositions have been previously approved by OMB under control number 0651-0009. The petitions to cancel have been previously approved by OMB under control number 0651-0040. These requirements are not being resubmitted for review at this time. Send comments regarding this burden estimate, or any other aspect of this data collection, including suggestions for reducing the burden, to the Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, VA 22202-3513 (Attn: Ari Leifman), and to the Office of Information and Regulatory Affairs, OMB, 725 17th Street, N.W., Washington, D.C. 20230 (Attn: PTO Desk Officer).

Proposed §§2.21, 2.32, 2.34, 2.45, 2.76, 2.88, 2.161, 2.167, and 2.183 may lessen the public reporting burden.

An application to obtain a registration can only be accepted for review if a respondent provides certain required minimum elements; otherwise, the Office will return the application to the respondent. Proposed §2.21 lessens the number of these required minimum elements. Therefore, the number of applications returned to respondents may decline, and this may result in fewer multiple submissions of applications to obtain registrations from single respondents.

An application to obtain registration must identify at least one legal basis for filing the application. Currently, two of these bases, use of the mark and a bona fide intention to use the mark, may not be identified in a single application. Proposed §2.34 allows a respondent to assert each of these bases with respect to different goods or services in a single application. This may allow some applicants to submit a single application rather than multiple applications.

Currently, applicants must describe the manner in which the mark is used or intended to be used in applications for registration of trademarks and service marks, in applications for registration of collective membership marks, in applications for registration of certification marks, in amendments to allege use of a mark, and in statements of use. Proposed §2.32 removes this requirement with respect to applications for registration of trademarks, service marks and collective membership marks; proposed §2.45 removes this requirement with respect to applications to register certification marks; proposed §2.76 removes this requirement with respect to amendments to allege use; and proposed §2.88 removes this requirement with respect to statements of use. The Office estimates that the removal of this requirement may reduce the time needed to complete each of these submissions by two minutes.

Currently, the type of commerce in which a mark is used must be specified in affidavits or declarations of continued use or excusable nonuse, in applications for renewal, and in declarations of incontestability. Proposed §2.161 eliminates this requirement with respect to declarations of continued use; proposed §2.167 eliminates this requirement with respect to declarations of incontestability; and proposed §2.183 eliminates this requirement with respect to applications for renewal. The Office estimates that the removal of this requirement may reduce the time needed to complete each of these submissions by one minute.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Patents.

37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

37 CFR Part 3

Administrative practice and procedure, Patents, Trademarks.

37 CFR Part 6

Trademarks.

For the reasons given in the preamble and under the authority contained in 35 U.S.C. 6 and 15 U.S.C. 41, as amended, the Patent and Trademark Office proposes to amend parts 1, 2, 3, and 6 of title 37 as follows:

PART I - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for part 1 continues to read as follows:

authority: 35 U.S.C. 6, unless otherwise noted.

1a. Amend §1.1 by revising paragraph (a)(2) to read as follows:

§1.1 Addresses for correspondence with the Patent and Trademark Office.

(a) ***

(2) Trademark correspondence.

(i) Send all trademark filings and correspondence, except as specified below or unless submitting electronically, to:

Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

(ii) Send trademark-related documents for the Assignment Division to record to:

Commissioner of Patents and Trademarks
Box Assignment
Washington, D.C. 20231

(iii) Send requests for certified or uncertified copies of trademark applications and registrations, other than coupon orders for uncertified copies of registrations, to:

Commissioner of Patents and Trademarks
Box 10
Washington, D.C. 20231

(iv) Send requests for coupon orders for uncertified copies of registrations to:

Commissioner of Patents and Trademarks
Box 9
Washington, D.C. 20231

(v) An applicant may transmit an application for trademark registration electronically, but only if the applicant uses the Patent and Trademark Office's electronic form.

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2. Amend §1.4 by revising the last sentence of paragraph (a)(2), revising paragraphs (d)(1) and (d)(1)(ii), and adding a new paragraph (d)(1)(iii) to read as follows:

§1.4 Nature of correspondence and signature requirements.

(a) * * *

(2) * * * See particularly the rules relating to the filing, processing, or other proceedings of national applications in subpart B, §§1.31 to 1.378; of internationalapplications in subpart C, §§1.401 to 1.499; of reexamination of patents in subpart D, §§1.501 to 1.570; of interferences in subpart E, §§1.601 to 1.690; of extension of patentterm in subpart F, §§1.710 to 1.785; and of trademark applications and registrations, §§2.11 to 2.186.

*****

(d)(1) Each piece of correspondence, except as provided in paragraphs (e) and (f) of this section, filed in a patent or trademark application, reexamination proceeding, patent or trademark interference proceeding, patent file or trademark registration file, trademark opposition proceeding, trademark cancellation proceeding, or trademark concurrent use proceeding, which requires a person's signature, must:

(i) ***

(ii) Be a direct or indirect copy, such as a photocopy or facsimile transmission (§ 1.6(d)), of an original. In the event that a copy of the original is filed, the original should be retained as evidence of authenticity. If a question of authenticity arises, the Office may require submission of the original; or

(iii) Where an electronically transmitted trademark filing is permitted, the person who signs the filing must either:

(A) Place a symbol comprised of numbers and/or letters between two forward slash marks in the signature block on the electronic submission; and print, sign and date in permanent ink, and maintain a paper copy of the electronic submission. Additionally, the person who signs the filing must maintain a verified statement confirming that the signatory has adopted the symbol shown in the signature block to verify the contents of the filing, and that the information in the electronic submission is identical to the information in the paper copy of the submission. This verified statement should not be submitted; or

(B) Sign the verified statement using some other form of electronic signature specified by the Commissioner.

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3. Amend §1.5 by revising paragraph (c) to read as follows:

§1.5 Identification of application, patent or registration.

*****

(c)(1) A letter about a trademark application should identify the serial number, the name of the applicant, and the mark.

(2) A letter about a registered trademark should identify the registration number, the name of the registrant, and the mark.

*****

4. Amend §1.6 by revising paragraph (a)(1), and adding new paragraph (a)(4), to read as follows:

§1.6 Receipt of correspondence.

(a) ***

(1) The Patent and Trademark Office is not open for the filing of correspondence on any day that is a Saturday, Sunday, or Federal holiday within the District of Columbia. Except for correspondence transmitted by facsimile under paragraph (a)(3), or filed electronically under paragraph (a)(4) of this section, no correspondence is received in the Office on Saturdays, Sundays, or Federal holidays within the District of Columbia.

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(4) Trademark-related correspondence transmitted electronically will be stampedwith the date on which the Office receives the transmission.

*****

5. Revise §1.23 to read as follows:

§1.23 Method of payment.

All payments of money required for Patent and Trademark Office fees, including fees for the processing of international applications (§1.445), shall be made in U.S. dollars and in the form of cashier's checks, Treasury notes, post office money orders, or by certified check. If sent in any other form, the Office may delay or cancel the credit until collection is made. Payments for USPTO electronic applications and other electronic submissions authorized by the USPTO may be made by credit card identified on the electronic form. Money orders and checks must be made payable to the Commissioner of Patents and Trademarks. Remittances from foreign countries must be payable and immediately negotiable in the United States for the full amount of the fee required. Money sent by mail to the Office will be at the risk of the sender; letters containing currency should be registered.

PART 2 - RULES APPLICABLE TO TRADEMARK CASES

6. The authority citation for part 2 continues to read as follow:

authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

6a. Revise §2.1 to read as follows:

§2.1 Sections of part 1 applicable.

Sections 1.1 to 1.26 of this chapter apply to trademark cases, except those parts that specifically refer to patents, and except § 1.22 to the extent that it is inconsistent with §§2.85(e), 2.101(d), 2.111(c), 2.164, or 2.185. Other sections of part 1 incorporated by reference in part 2 also apply to trademark cases.

7. Section 2.6 is amended by revising the introductory text, paragraphs (a)(5), (a)(6), (a)(12), (a)(13), (a)(14), (a)(19), (a)(20), and (a)(21) to read as follows:

§2.6 Trademark fees.

The Patent and Trademark Office requires the following fees and charges:

(a) ***

(5) For filing an application for renewal of a registration, per class $200.00

(6) Additional fee for filing a renewal application during the grace period, per class $100.00

(12) For filing an affidavit under section 8 of the Act, per class..... $200.00

(13) For filing an affidavit under section 15 of the Act, per class $200.00

(14) Additional fee for filing a section 8 affidavit during the grace period, per class..... *$100.00*

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(19) For filing a request to divide an application, per new application (file wrapper) created $300.00

(20) For correcting a deficiency in a section 8 affidavit $100.00

(21) For correcting a deficiency in a renewal *application* *$100.00*

8. Amend §2.17 by adding paragraphs (c) and (d) to read as follows:

§2.17 Recognition for representation.

*****

(c) To be recognized as a representative, an attorney as defined *in §10.1(c) of this chapter* may file a power of attorney, appear in person, or sign a paper on behalf of an applicant or registrant that is filed with the Office in a trademark case.

(d) A party may file a power of attorney that relates to more than one trademark application or registration, or to all existing and future applications and registrations of that party. A party relying on a power of attorney concerning more than one application or registration must:

(1) Include a copy of the previously filed power of attorney; *or*

(2) Refer to the power of attorney, specifying the filing date of the previously filed power of attorney; the application serial number (if known), registration number, or *inter partes* proceeding number for which the original power of attorney was filed; and the name of the party who signed the power of attorney; or, if the application serial number is not known, submit a copy of the application or a copy of the mark, and specify the filing date.

9. Revise §2.20 to read as follows:

§2.20 Declarations in lieu of oaths.

Instead of an oath, affidavit, verification, or sworn statement, the following language may be used:

> I declare pursuant to the provisions of 18 U.S.C. 1001 and under the penalty of perjury that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements and the like are punishable by fine or imprisonment, or both, and may jeopardize the validity of the application or document or any registration resulting therefrom.

10. Revise §2.21 to read as follows:

§2.21 Requirements for receiving a filing date.

(a) The Office will grant a filing date to an application that contains all of the following:

(1) The name of the applicant;

(2) A name and address for correspondence;

(3) A clear drawing of the mark;

(4) A listing of the goods or services; and

(5) The filing fee for at least one class of goods or services, required by §2.6.

(b) If the applicant does not submit all the elements required in paragraph (a), the Office may return the papers with an explanation of why the filing date was denied.

(c) The applicant may correct and resubmit the application papers. If the resubmitted papers and fee meet all the requirements of paragraph (a) of this section, the Office will grant a filing date as of the date the Office receives the corrected papers.

11. Remove and reserve §2.31.

12. Revise §2.32 to read as follows:

§2.32 Requirements for written application.

(a) The application must be in English and include the fol*lowing:*

(1) A request for registration;

(2) The name of the applicant(s);

(3)(i) The citizenship of the applicant(s); or

(ii) If the applicant is a corporation, association, partnership or other juristic person, the state or nation under the laws of *which the applicant is organized; and*

(iii) If the applicant is a partnership, the names and citizenship of the general partners;

(4) The address of the applicant;

(5) One or more bases, as required by §2.34(a);

(6) A list of the particular goods or services on or in connection with which the applicant uses or intends to use the mark. In a *United States application filed undersection 44 of the Act, the* scope of the goods or services covered by the section 44 basis may not exceed the scope of the goods or services in the foreign application or registration; and

(7) The international class of goods or services, if known. See §6.1 of this chapter for a list of the international classes of goods and services.

(b) The application must include a verified statement that meets the requirements of §2.33.

(c) For the requirements for a multiple class application, see §2.86.

13. Revise §2.33 to read as follows:

§2.33 Verified statement.

(a) The application must include a statement that is signed and verified (sworn to) or supported by a declaration under §2.20 *by a person properly authorized to sign on behalf of the appli*cant. A person who is properly authorized to sign on behalf of the applicant includes a person with legal authority to bind the applicant and/or a person with firsthand knowledge and actual or implied authority to act on behalf of the applicant.

(b)(1) In an application under section 1(a) of the Act, the verified statement must allege:

> That the applicant has adopted and is using the mark shown in the accompanying drawing; that the applicant believes it is the owner of the mark; that the mark is in use in commerce, specifying the type of commerce; that to the best of the declarant's knowledge and belief, no other person has the right to use the mark in commerce, either in the identical form or in such near resemblance as to be likely, when applied to the goods or services of the other person, to cause confusion or mistake, or to deceive; that the specimen shows the mark as used on or in connection with the goods or services; and that the facts set forth in the application are true.

(2) In an application under section 1(b) or section 44 of the Act, the verified statement must allege:

> That the applicant has a bona fide intention *to use the mark shown in the accompanying* drawing in commerce on or in connection with the specified goods or services; that the appli-

cant believes it is entitled to use the mark; that to the best of the declarant's knowledge and belief, no other person has the right to use the mark in commerce, either in the identical form or in such near resemblance as to be likely, when applied to the goods or services of the other person, to cause confusion or mistake, or to deceive; and that the facts set forth in the application are true.

(c) If the verified statement is not filed within a reasonable time after it is signed, the Office may require the applicant to submit a substitute verification or declaration under §2.20 of the applicant's continued use or bona fide intention to use the mark in commerce.

(d) Where an electronically transmitted filing is permitted, the person who signs the verified statement must either:

(1) Place a symbol comprised of numbers and/or letters between two forward slash marks in the signature block on the electronic submission; and print, sign and date in permanent ink, and maintain a paper copy of the electronic submission. Additionally, the applicant must maintain a verified statement confirming that the signatory has adopted the symbol shown in the signature block to verify the contents of the document, and that the information in the electronic submission is identical to the information in the paper copy of the submission. The applicant should not submit this verified statement; or

(2) Sign the verified statement using some other form of electronic signature specified by the Commissioner.

14. Add §2.34 to read as follows:

§2.34 Bases for filing.

(a) The application must include one or more of the following four filing bases:

(1) Use in commerce under section 1(a) of the Act. The requirements for anapplication based on section 1(a) of the Act are:

(i) The trademark owner's verified statement that the mark is in use in commerce on or in connection with the goods or services listed in the application. If the verification is not filed with the initial application, the verified statement must allege that the mark was in use in commerce on or in connection with the goods or services listed in the application as of the application filing date;

(ii) The date of the applicant's first use of the mark anywhere on or in connection with the goods or services;

(iii) The date of the applicant's first use of the mark in commerce as a trademark or service mark, specifying the type of commerce; and

(iv) One specimen showing how the applicant actually uses the mark in commerce.

(v) An application may list more than one item of goods, or more than one service, provided the applicant has used the mark on or in connection with all the specified goods or services. The dates of use required by paragraphs (ii) and (iii) of this section may be for only one of the items specified.

(2) Intent-to-use under section 1(b) of the Act.

(i) In an application under section 1(b) of the Act, the trademark owner must verify that it has a bona fide intention to use the mark in commerce on or in connection with the goods or services listed in the application. If the verification is not filed with the initial application, the verified statement must allege that the applicant had a bona fide intention to use the mark in commerce as of the filing date of the application.

(ii) The application may list more than one item of goods, or more than one service, provided the applicant has a bona fide intention to use the mark in commerce on or in connection with all the specified goods or services.

(3) Registration of a mark in a foreign applicant's country of origin under section 44(e) of the Act. The requirements for an application under section 44(e) of the Act are:

(i) The trademark owner's verified statement that it has a bona fide intention to use the mark in commerce on or in connection with the goods or services listed in the application. If the verification is not filed with the initial application, the verified statement must allege that the applicant had a bona fide intention to use the mark in commerce as of the filing date of the application.

(ii) A certification or certified copy of a registration in the applicant's country of origin showing that the mark has been registered in that country, and that the registration is in full force and effect. The certification or certified copy must show the name of the owner, the mark, and the goods or services for which the mark is registered. If the certification or certified copy is not in the English language, the applicant must submit a translation.

(iii) If the record indicates that the foreign registration will expire before the United States registration will issue, the applicant must submit a certification or certified copy from the country of origin to establish that the registration has been renewed and will be in force at the time the United States registration will issue. If the certification or certified copy is not in the English language, the applicant must submit a translation.

(iv) The application may list more than one item of goods, or more than one service, provided the applicant has a bona fide intention to use the mark in commerce on or in connection with all the specified goods or services.

(4) Claim of priority, based upon an earlier-filed foreign application, under section 44(d) of the Act. The requirements for an application under section 44(d) of the Act are:

(i) A claim of priority, filed within six months of the filing date of the foreign application. Before publication or registration on the Supplemental Register, the applicant must either:

(A) Specify the filing date and country of the first regularly filed foreign application; or

(B) State that the application is based upon a subsequent regularly filed application in the same foreign country, and that any prior-filed application has been withdrawn, abandoned or otherwise disposed of, without having been laid open to public inspection and without having any fights outstanding, and has not served as a basis for claiming a fight of priority.

(ii) Include the trademark owner's verified statement that it has a bona fide intention to use the mark in commerce on or in connection with the goods or services listed in the application. If the verification is not filed with the initial application, the verified statement must allege that the applicant had a bona fide intention to use the mark in commerce as of the filing date of the application.

(iii) Before the application can be approved for publication, or for registration onthe Supplemental Register, the applicant must establish a basis under section 1(a), section 1(b) or section 44(e) of the Act.

(iv) The application may list more than one item of goods, or more than one service, provided the applicant has a bona fide intention to use the mark in commerce on or in connection with all the specified goods or services.

(b)(1) The applicant may claim more than one basis, provided that the applicant satisfies all requirements for the bases claimed. However, the applicant may not claim both sections 1(a) and 1(b) for the identical goods or services in the same application.

(2) If the applicant claims more than one basis, the applicant must list each basis, followed by the goods or services to which that basis applies. If some or all of the goods or services are covered by more than one basis, this must be stated.

(c) The word "commerce" means commerce that Congress may lawfully regulate, as specified in section 45 of the Act.

15. Remove §2.37.

16. Redesignate §2.35 as §2.37.

17. Add new §2.35, to read as follows:

§2.35 Adding, deleting, or substituting bases.

(a) Before publication, the applicant may add or substitute a basis, if the applicant meets all requirements for the new basis, as stated in §2.34. The applicant may delete a basis at any time.

(b) An applicant may not amend an application to add or substitute a basis after the mark has been published for opposition. The applicant may delete a basis after publication.

(c) When the applicant substitutes a basis, the Office will presume that the original basis was valid and the application will retain the original filing date, unless there is contradictory evidence in the record.

(d) If an applicant properly claims a section 44(d) basis in addition to another basis, the applicant will retain the priority filing date under section 44(d) no matter which basis the applicant perfects.

(e) The applicant may add or substitute a section 44(d) basis only within the six-month priority period following the filing date of the foreign application.

(f) When the applicant adds or substitutes a basis, the applicant must list each basis, followed by the goods or services to which that basis applies.

(g) When the applicant deletes a basis, the applicant must also delete any goods or services covered solely by the deleted basis.

(h) Once an applicant claims a section 1(b) basis as to any or all of the goods or services, the applicant may not amend the application to seek registration under section 1(a) of the Act for those goods or services unless the applicant files an allegation of use under section 1(c) or section 1(d) of the Act.

18. Amend §2.38 by revising paragraph (a) to read as follows:

§2.38 Use by predecessor or by related companies.

(a) If the first use of the mark was by a predecessor in title or by a related company (sections 5 and 45 of the Act), and the use inures to the benefit of the applicant, the dates of first use (§§2.34(a)(1)(ii) and (iii)) may be asserted with a statement that first use was by the predecessor in title or by the related company, as appropriate.

19. Remove and reserve §2.39.

20. Revise §2.45 to read as follows:

§2.45 Certification mark.

(a) In an application to register a certification mark under section 1(a) of the Act, the application shall include all applicable elements required by the preceding sections for trademarks. In addition, the application must: specify the conditions under which the certification mark is used; allege that the applicant exercises legitimate control over the use of the mark; allege that the applicant is not engaged in the production or marketing of the goods or services to which the mark is applied; and include a copy of the standards that determine whether others may use the certification mark on their goods and/or in connection with their services.

(b) In an application to register a certification mark under section 1(b) or section 44 of the Act, the application shall include all applicable elements required by the preceding sections for trademarks. In addition, the application must: specify the conditions under which the certification mark is intended to be used; allege that the applicant intends to exercise legitimate control over the use of the mark; and allege that the applicant will not engage in the production or marketing of the goods or services to which the mark is applied. When the applicant files an amendment to allege use undersection 1(c) of the Act, or a statement of use under section 1(d) of the Act, the applicant must submit a copy of the standards that determine whether others may use the certification mark on their goods and/or in connection with their services.

21. In §2.51, remove paragraphs (c), (d) and (e).

22. Revise §2.52 to read as follows:

§2.52 Types of drawings and format for drawings.

(a) A drawing depicts the mark sought to be registered. The drawing must show only one mark. The applicant must include a clear drawing of the mark when the application is filed. There are two types of drawings:

(1) Typed drawing. The drawing may be typed if the mark consists only of words, letters, numbers, common forms of punctuation, or any combination of these elements. In a typed drawing, every word or letter must be typed in uppercase type. If the applicant submits a typed drawing, the application is not limited to the mark depicted in any special form or lettering.

(2) Special form drawing. A special form drawing is required if the mark has a two or three-dimensional design; or color; or words, letters, or numbers in a particular style of lettering; or unusual forms of punctuation.

(i) Special form drawings must be made with a pen or by a process that will provide high definition when copied. A photolithographic, printer's proof copy, or other high quality reproduction of the mark may be used. Every line and letter, including color lining and lines used for shading, must be black. All lines must be clean, sharp, and solid, and must not be fine or crowded. Gray tones or tints may not be used for surface shading or any other purpose.

(ii) If necessary to adequately depict the commercial impression of the mark, the applicant may be required to submit a drawing that shows the placement of the mark by surrounding the mark with a proportionately accurate broken-line representation of the particular goods, packaging, or advertising on which the mark appears. The applicant must also use broken lines to show any other matter not claimed as part of the mark. For any drawing using broken lines to indicate placement of the mark, or matter not claimed as pan of the mark, the applicant must include in the body of the application a written description of the mark and explain the purpose of the broken lines.

(iii) If the mark has three-dimensional features, the applicant must submit a drawing that depicts a single rendition of the mark, and the applicant must include a description of the mark indicating that the mark is three-dimensional.

(iv) If the mark has motion, the applicant may submit a drawing that depicts a single point in the movement, or the applicant may submit a square drawing that contains up to four freeze frames showing various points in the movement, whichever best depicts the commercial impression of the mark. The applicant must also submit a written description of the mark.

(v) If the mark has color, the applicant may claim that all or pan of the mark consists of one or more colors. To claim color, the applicant must submit a statement explaining where the color or colors appear in the mark and the nature of the color(s).

(vi) If a drawing cannot adequately depict all significant features of the mark, the applicant must also submit a written description of the mark.

(3) Sound, scent, and non-visual marks. The applicant is not required to submit a drawing if the applicant's mark consists only of a sound, a scent, or other completely non-visual matter. For these types of marks, the applicant must submit a detailed written description of the mark.

(b) Recommended Format for special form drawings

(1) Type of paper and ink. The drawing should be on a piece of non-shiny, white paper that is separate from the application. Black ink should be used to depict the mark.

(2) Size of paper and size of mark. The drawing should be on paper that is 8 to 8 1/2 inches (20.3 to 21.6 cm.) wide and 11 to 11.69 inches (27.9 to 29.7 cm.) long. One of the shorter sides of the sheet should be regarded as its top edge. The drawing should be between 2.5 inches (6.1 cm.) and 4 inches (10.3 cm.) high and/or wide. There should be at least a 1 inch (2.5 cm.) margin between the drawing and the edges of the paper, and at least a 1 inch (2.5 cm.) margin between the drawing and the heading.

(3) Heading. Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge, the applicant should type the following: applicant's name; applicant's address; the goods or services recited in the application, or a typical item of the goods or services if numerous items are recited in the application; the date of first use of the mark and first use of the mark in commerce in an application under section 1 (a) of the Act; the priority filing date of the relevant foreign application in an application claiming the benefit of a prior foreign application under section 44(d) of the Act. If the information in the heading is lengthy, the heading may continue onto a second page,but the mark should be depicted on the first page.

(c) Drawings in electronically transmitted applications. For an electronically transmitted application, if the drawing is in special form, the applicant must attach a digitized image of the mark to the electronic submission.

23. Revise §2.56 to read as follows:

§2.56 Specimens.

(a) An application under section l(a) of the Act, an amendment to allege use under §2.76, and a statement of use under §2.88 must each include one specimen showing themark as used on or in connection with the goods, or in the sale or advertising of theservices in commerce.

(b)(1) A trademark specimen is a label, tag, or container for the goods, or a display associated with the goods. The Office may accept another document related to the goods or the sale of the goods when it is not possible to place the mark on the goods or packaging for the goods.

(2) A service mark specimen must show the mark as actually used in the sale or advertising of the services.

(3) A collective trademark or collective service mark specimen must show how a member uses the mark on the member's goods or in the sale or advertising of the member's services.

(4) A collective membership mark specimen must show use by members to indicate membership in the collective organization.

(5) A certification mark specimen must show how a person other than the owner uses the mark to certify regional or other origin, material, mode of manufacture, quality, accuracy, or other characteristics of that person's goods or services; or that members of a union or other organization performed the work or labor on the goods or services.

(c) A photocopy or other reproduction of a specimen of the mark as actually used on or in connection with the goods, or in the sale or advertising of the services, is acceptable. However, a photocopy of the drawing required by §2.51 is not a proper specimen.

(d)(1) The specimen should be flat, and not larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.) long. If a specimen of this size is not available, the applicant may substitute a suitable photograph or other facsimile.

(2) If the applicant files a specimen exceeding these size requirements (a "bulky specimen"), the Office will create a facsimile of the specimen that meets the requirements of the rule (i.e., is flat and no larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.) long) and put it in the file wrapper.

(3) In the absence of non-bulky alternatives, the Office may accept an audio or video cassette tape recording, CD-ROM, or other appropriate medium.

(4) For an electronically transmitted application, or other electronic submission, the specimen must be submitted as a digitized image.

24. Remove and reserve §2.57.

25. Remove and reserve §2.58.

26. Revise §2.59 to read as follows:

§2.59 Filing substitute specimen(s).

(a) In an application under section l(a) of the Act, the applicant may submit substitute specimens of the mark as used on or in connection with the goods, or in the sale or advertising of the services. The applicant must verify by an affidavit or declaration under §2.20 that the substitute specimens were in use in commerce at least as early as the filing date of the application. Verification is not required if the specimen is a duplicate or facsimile of a specimen already of record in the application.

(b) In an application under section l(b) of the Act, after filing either an amendment to allege use under §2.76 or a statement of use under §2.88, the applicant may submit substitute specimens of the mark as used on or in connection with the goods, or in the sale or advertising of the services. If the applicant submits substitute specimen(s), the applicant must:

(1) For an amendment to allege use under §2.76, verify by affidavit or declaration under §2.20 that the applicant used the substitute specimen(s) in commerce prior to filing the amendment to allege use.

(2) For a statement of use under §2.88, verify by affidavit or declaration under §2.20 that the applicant used the substitute specimen(s) in commerce either prior to filing the statement of use or prior to the expiration of the deadline for filing the statement of use.

27. Revise §2.66 to read as follows:

§2.66 Revival of abandoned applications.

(a) The applicant may file a petition to revive an application abandoned because the applicant did not timely respond to an Office action or notice of allowance. The applicant must file the petition:

(1) Within two months of the mailing date of the notice of abandonment; or

(2) Within two months of actual knowledge of the abandonment, if the applicant did not receive the notice of abandonment, and the applicant was diligent in checking the status of the application.

(b) The requirements for filing a petition to revive an application abandoned because the applicant did not timely respond to an Office action are:

(1) The petition fee required by §2.6;

(2) A statement, signed by someone with firsthand knowledge of the facts, that the delay in filing the response on or before the due date was unintentional; and

(3) Unless the applicant alleges that it did not receive the Office action, the proposed response.

(c) The requirements for filing a petition to revive an application abandoned because the applicant did not timely respond to a notice of allowance are:

(1) The petition fee required by §2.6;

(2) A statement, signed by someone with firsthand knowledge of the facts, that the delay in filing the statement of use (or request for extension of time to file a statement of use) on or before the due date was unintentional;

(3) Unless the applicant alleges that it did not receive the notice of allowance and requests cancellation of the notice of allowance, the required fees for the number of requests for extensions of time to file a statement of use that the applicant

should have filed under §2.89 if the application had never been abandoned;

(4) Unless the applicant alleges that it did not receive the notice of allowance and requests cancellation of the notice of allowance, either a statement of use under §2.88 or a request for an extension of time to file a statement of use under §2.89; and

(5) Unless a statement of use is filed with or before the petition, or the applicant alleges that it did not receive the notice of allowance and requests cancellation of the notice of allowance, the applicant must file any further requests for extensions of time to file a statement of use under §2.89 that become due while the petition is pending, or file a statement of use under §2.88.

(d) In an application under section 1(b) of the Act, the Commissioner will not grant the petition if this would permit the filing of a statement of use more than 36 months after the mailing date of the notice of allowance under section 13(b)(2) of the Act.

(e) The Commissioner will grant the petition to revive if the applicant complies with the requirements listed above and establishes that the delay in responding was unintentional.

(f) If the Commissioner denies a petition, the applicant may request reconsideration if the applicant:

(1) Files the request within two months of the mailing date of the decision denying the petition; and

(2) Pays a second petition fee under §2.6.

28. Revise §2.71 to read as follows:

§2.71 Amendments to correct informalities.

The applicant may amend the application during the course of examination, when required by the Office or for other reasons.

(a) The applicant may amend the application to clarify or limit, but not to broaden, the identification of goods and/or services.

(b)(1) If the declaration or verification of an application under §2.33 is unsigned or signed by the wrong party, the applicant may submit a substitute verification or declaration under §2.20.

(2) If the declaration or verification of a statement of use under §2.88, or a request for extension of time to file a statement of use under §2.89, is unsigned or signed by the wrong party, the applicant must submit a substitute verification before the expiration of the statutory deadline for filing the statement of use.

(c) The applicant may amend the dates of use, provided that the applicant supports the amendment with an affidavit or declaration under §2.20, except that the following amendments are *not* permitted:

(1) In an application under section 1(a) of the Act, the applicant may not amend the application to specify a date of use that is subsequent to the filing date of the application;

(2) In an application under section 1(b) of the Act, after filing a statement of use under §2.88, the applicant may not amend the statement of use to specify a date of use that is subsequent to the expiration of the deadline for filing the statement of use.

(d) The applicant may amend the application to correct the name of the applicant, if there is a mistake in the manner in which the name of the applicant is set out in the application. The amendment must be supported by an affidavit or declaration under §2.20, signed by the applicant. However, the application cannot be amended to set forth a different entity as the applicant. An application filed in the name of an entity that did not own the mark as of the filing date of the application is void.

29. Revise §2.72 to read as follows:

§2.72 Amendments to description or drawing of the mark.

(a) In an application based on use in commerce under section 1(a) of the Act, the applicant may amend the description or drawing of the mark only if:

(1) The specimens originally filed, or substitute specimens filed under §2.59(a), support the proposed amendment; and

(2) The proposed amendment does not materially alter the mark. The Office will determine whether a proposed amendment materially alters a mark by comparing the proposed amendment with the description or drawing of the mark filed with the original application.

(b) In an application based on a bona fide intention to use a mark in commerce under section 1(b) of the Act, the applicant may amend the description or drawing of the mark only if:

(1) The specimens filed with an amendment to allege use or statement of use, or substitute specimens filed under §2.59(b), support the proposed amendment; and

(2) The proposed amendment does not materially alter the mark. The Office will determine whether a proposed amendment materially alters a mark by comparing the proposed amendment with the description or drawing of the mark filed with the original application.

(c) In an application based on a claim of priority under section 44(d) of the Act, or on a mark duly registered in the country of origin of the foreign applicant under section 44(e) of the Act, the applicant may amend the description or drawing of the mark only if:

(1) The description or drawing of the mark in the foreign registration certificate supports the amendment; and

(2) The proposed amendment does not materially alter the mark. The Office will determine whether a proposed amendment materially alters a mark by comparing the proposed amendment with the description or drawing of the mark filed with the original application.

30. Amend §2.76 by revising paragraphs (b), (e)(2), and (e)(3), and adding paragraphs (i) and (j) to read as follows:

§2.76 Amendment to allege use.

*****

(b) A complete amendment to allege use must include:

(1) A statement that is signed and verified (sworn to) or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant (see §2.33(a)(2)) that:

(i) The applicant believes it is the owner of the mark; and

(ii) The mark is in use in commerce, specifying the date of the applicant's first use of the mark and first use of the mark in commerce, the type of commerce, and those goods or services specified in the application on or in connection with which the applicant uses the mark in commerce.

(2) One specimen of the mark as actually used in commerce. See §2.56 for the requirements for specimens; and

(3) The fee per class required by §2.6.

*****

(e) ***

(2) One specimen or facsimile of the mark as used in commerce; and

(3) A statement that is signed and verified (sworn to) or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant that the mark is in use in commerce.

*****

(i) If the applicant does not file the amendment to allege use within a reasonable time aeter it is signed, the Office may

require a substitute verification or declaration under §2.20 stating that the mark is still in use in commerce.

(j) For the requirements for a multiple class application, see §2.86.

31. Revise §2.86 to read as follows:

§2.86 Application may include multiple classes.

(a) In a single application, an applicant may apply to register the same mark for goods and/or services in multiple classes. The applicant must:

(1) Specifically identify the goods or services in each class;

(2) Submit an application filing fee for each class; and

(3) Include either dates of use (see §§2.34(a)(1)(ii) and (iii)) and one specimen for each class, or a statement of a bona fide intention to use the mark in commerce on or inconnection with all the goods or services specified in each class. The applicant may not claim both use in commerce and a bona fide intention to use the mark in commerce for the identical goods or services in one application.

(b) An amendment to allege use under §2.76 or a statement of use under §2.88 must include, for each class, the required fee, dates of use, and one specimen. The applicant may not file the amendment to allege use or statement of use until the applicant has used the mark on all the goods or services, unless the applicant files a request to divide. See §2.87 for information regarding requests to divide.

(c) The Office will issue a single certificate of registration for the mark, unless the applicant files a request to divide. See §2.87 for information regarding requests to divide.

32. Amend §2.88 by revising paragraphs (b) and (e) and by adding paragraphs (k) and (l) to read as follows:

§2.88 Filing statement of use after notice of allowance.

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(b) A complete statement of use must include:

(1) A statement that is signed and verified (sworn to) or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant (see §2.33(a)(2)) that:

(i) The applicant believes it is the owner of the mark; and

(ii) The mark is in use in commerce, specifying the date of the applicant's first use of the mark and first use of the mark in commerce, the type of commerce, and those goods or services specified in the notice of allowance on or in connection with which the applicant uses the mark in commerce;

(2) One specimen of the mark as actually used in commerce. See §2.56 for the requirements for specimens; and

(3) The fee per class required by §2.6.

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(e) The Office will review a timely filed statement of use to determine whether it meets the following minimum requirements:

(1) The fee for at least a single class, required by §2.6;

(2) One specimen of the mark as used in commerce;

(3) A statement that is signed and verified (sworn to) or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant that the mark is in use in commerce. If the verification or declaration is unsigned or signed by the wrong party, the applicant must submit a substitute verification on or before the statutory deadline for filing the statement of use.

*****

(k) If the statement of use is not filed within a reasonable time after the date it is signed, the Office may require a substitute verification or declaration under §2.20 stating that the mark is still in use in commerce.

(l) For the requirements for a multiple class application, see §2.86.

33. Amend §2.89 by revising paragraphs (a), (b), and (d) and by adding paragraph (h) to read as follows:

§2.89 Extensions of time for filing a statement of use.

(a) The applicant may request a six-month extension of time to file the statement of use required by §2.88. The extension request must be filed within six months of the mailing date of the notice of allowance under section 13(b)(2) of the Act and must include the following:

(1) A written request for an extension of time to file the statement of use;

(2) The fee per class required by §2.6; and

(3) A statement that is signed and verified (sworn to) or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant (see §2.33(a)(2)) that the applicant still has a bona fide intention to use the mark in commerce, specifying the relevant goods or services. If the verification is unsigned or signed by the wrong party, the applicant must submit a substitute verification within six months of the mailing date of the notice of allowance.

(b) Before the expiration of the previously granted extension of time, the applicant may request further six-month extensions of time to file the statement of use by submitting the following:

(1) A written request for an extension of time to file the statement of use;

(2) The fee per class required by §2.6;

(3) A statement that is signed and verified (sworn to) or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the applicant (see §2.33(a)(2)) that the applicant still has a bona fide intention to use the mark in commerce, specifying the relevant goods or services. If the verification is unsigned or signed by the wrong party, the applicant must submit a substitute verification before the expiration of the previously granted extension; and

(4) A showing of good cause, as specified in paragraph (d) of this section.

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(d) The showing of good cause must include a statement of the applicant's on going efforts to make use of the mark in commerce on or in connection with each of the relevant goods or services. Those efforts may include product or service research or development, market research, manufacturing activities, promotional activities, steps to acquire distributors, steps to obtain governmental approval, or other similar activities. In the alternative, the applicant must submit a satisfactory explanation for the failure to make efforts to use the mark in commerce.

*****

(h) If the extension request is not filed within a reasonable time after it is signed, the Office may require a substitute verification or declaration under §2.20 stating that the applicant still has a bona fide intention to use the mark in commerce.

34. Amend §2.101 by revising paragraph (d)(1) to read as follows:

§2.101 Filing an opposition.

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(d)(1) The opposition must be accompanied by the required fee for each party joined as opposer for each class in the application for which registration is opposed (see §2.6). If no

fee, or a fee insufficient to pay for one person to oppose the registration of a mark in at least one class, is submitted within thirty days after publication of the mark to be opposed or within an extension of time for filing an opposition, the opposition will not be refused if the required fee(s) is submitted to the Patent and Trademark Office within the time limit set in the notification of this defect by the Office.

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35. Amend §2.111 by revising paragraph (c)(1) to read as follows:

§2.111 Filing petition for cancellation.

*****

(c)(1) The petition must be accompanied by the required fee for each class in the registration for which cancellation is sought (see §2.6). If the fee submitted is insufficient for a cancellation against all of the classes in the registration, and the particular class or classes against which the cancellation is filed are not specified, the Office will issue a written notice allowing petitioner a set time in which to submit the required fees(s) (provided that the five-year period, if applicable, has not expired) or to specify the class or classes sought to be cancelled. If the required fee(s) is not submitted, or the specification made, within the time set in the notice, the cancellation will be presumed to be against the class or classes in ascending order, beginning with the lowest numbered class, and including the number of classes in the registration for which the fees submitted are sufficient to pay the fee due for each class.

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36. Amend §2.146 by revising paragraph (d) and by adding paragraphs (i) and (j) to read as follows:

§2.146 Petitions to the Commissioner.

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(d) A petition must be filed within two months of the mailing date of the action from which relief is requested, unless a different deadline is specified elsewhere in this chapter.

*****

(i) Where a petitioner seeks to revive or reinstate an application or registration that was abandoned or cancelled because papers were lost or mishandled by the Office, the Commissioner may deny the petition if the petitioner was not diligent in checking the status of the application or registration.

(j) If the Commissioner denies a petition, the petitioner may request reconsideration, if the petitioner:

(1) Files the request within two months of the mailing date of the decision denying the petition; and

(2) Pays a second petition fee under §2.6.

37. Revise §2.151 to read as follows:

§2.151 Certificate.

When the Office determines that a mark is registrable, a certificate will be issued stating that the applicant is entitled to registration on the Principal Register or on the Supplemental Register. The certificate will state the date on which the application for registration was filed in the Office, the act under which the mark is registered, the date of issue, and the number of the registration. A reproduction of the mark and pertinent data from the application will be sent with the certificate. A notice of the requirements of section 8 of the Act will accompany the certificate.

38. Revise §2.155 to read as follows:

§2.155 Notice of publication.

The Office will send the registrant a notice of publication of the mark and of the requirement for filing the affidavit or declaration required by section 8 of the Act.

39. Revise §2.156 to read as follows:

§2.156 Not subject to opposition; subject to cancellation.

The published mark is not subject to opposition, but is subject to petitions to cancel as specified in §2.111 and to cancellation for failure to file the affidavit or declaration required by section 8 of the Act.

40. Add §2.160 to read as follows:

§2.160 Affidavit or declaration of continued use or excusable nonuse required to avoid cancellation of registration.

(a) During the following time periods, the owner of the registration must file an affidavit or declaration of continued use or excusable nonuse, or the registration will be cancelled:

(1)(i) For registrations issued under the Trademark Act of 1946, between the fifth and the sixth year after the date of registration; or

(ii) For registrations issued under prior Acts, between the fifth and the sixth year after the date of publication under section 12(c) of the Act; *and*

(2) For all registrations, within the year before the end of every ten-year period after the date of registration.

(3) The affidavit or declaration may be filed within a grace period of six months after the end of the deadline set forth in paragraphs (a)(1) and (a)(2), with payment of the grace period surcharge required by section 8(c)(1) of the Act and §2.6.

(b) For the requirements for the affidavit or declaration, see §2.161.

41. Revise §2.161 to read as follows:

§2.161 Requirements for a complete affidavit or declaration of continued use or excusable nonuse.

A complete affidavit or declaration under section 8 of the Act must:

(a) Be filed by the owner within the period set forth in section 8 of the Act;

(b) Include a statement that is signed and verified (sworn to) or supported by a declaration under §2.20 by a person properly authorized to sign on behalf of the owner, attesting to the continued use or excusable nonuse of the mark within the period set forth in section 8 of the Act. A person who is properly authorized to sign on behalf ofthe owner includes a person with legal authority to bind the owner and/or a person with firsthand knowledge and actual or implied authority to act on behalf of the owner.

(c) Include the registration number;

(d)(1) Include the fee required by §2.6 for each class of goods or services that the affidavit or declaration covers;

(2) If the affidavit or declaration is filed during the grace period under section 8(c)(1) of the Act, include the late fee per class required by §2.6;

(3) If at least one fee is submitted for a multi-class registration, but the class(es) to which the fee(s) should be applied are not specified, the Office will issue a notice requiring either the submission of additional fee(s) or an indication of the class(es) to which the original fee(s) should be applied. Additional fee(s) may be submitted if the requirements of §2.164 are met. If the required fee(s) are not submitted and the class(es) to which the original fee(s) should be applied are not specified, the Office will presume that the fee(s) cover the classes in ascending order, beginning with the lowest numbered class;

(e)(1) Specify the goods or services for which the mark is in use in commerce, and/or the goods or services for which excusable nonuse is claimed under §2.161(f)(2);

(2) If the affidavit or declaration covers less than all the goods or services, or less than all the classes in the registration, specify the goods or services being deleted from the registration;

(f)(1) State that the registered mark is in use in commerce on or in connection with the goods or services in the registration; or (2) If the registered mark is not in use in commerce on or in connection with all the goods or services in the registration, set forth the date when use of the mark in commerce stopped and the approximate date when use is expected to resume; and recite facts to show that nonuse as to those goods or services is due to special circumstances that excuse the nonuse and is not due to an intention to abandon the mark. If the facts recited are found insufficient, further evidence or explanation may be submitted, if the requirements of §2.164 are met;

(g) Include a specimen showing current use of the mark for each class of goods or services, unless excusable nonuse is claimed under §2.161(f)(2). The specimen must:

(1) Show the mark as actually used on or in connection with the goods or in the sale or advertising of the services. A photocopy or other reproduction of the specimen showing the mark as actually used is acceptable. However, a photocopy that merely reproduces the registration certificate is not a proper specimen;

(2) Be flat and no larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.)long. If a specimen exceeds these size requirements (a "bulky specimen"), the Office will create a facsimile of the specimen that meets the requirements of the rule (i.e., is flat and no larger than 8 1/2 inches (21.6 cm.) wide by 11.69 inches (29.7 cm.) long) and put it in the file wrapper;

(h) If the registrant is not domiciled in the United States, the registrant must list the name and address of a United States resident upon whom notices or process in proceedings affecting the registration may be served.

42. Revise §2.162 to read as follows:

§2.162 Notice to registrant.

When a certificate of registration is originally issued, the Office includes a notice of the requirement for filing the affidavit or declaration of use or excusable nonuse under section 8 of the Act. However the affidavit or declaration must be filed within the time period required by section 8 of the Act even if this notice is not received.

43. Revise §2.163 to read as follows:

§2.163 Acknowledgment of receipt of affidavit or declaration.

The Office will issue a notice as to whether an affidavit or declaration is acceptable, or the reasons for refusal.

(a) If the owner of the registration filed the affidavit or declaration within the time periods set forth in section 8 of the Act, deficiencies may be corrected if the requirements of §2.164 are met.

(b) A response to the refusal must be filed within six months of the mailing date of the Office action, or before the end of the filing period set forth in section 8(a) orsection 8(b) of the Act, whichever is later. If no response is filed within this time period, the registration will be cancelled.

44. Add §2.164 to read as follows:

§2.164 Correcting deficiencies in affidavit or declaration.

(a) If the owner of the registration files an affidavit or declaration within the time periods set forth in section 8 of the Act, deficiencies may be corrected, as follows:

(1) Correcting deficiencies in affidavits or declarations timely filed within the periods set forth in sections 8(a) and 8(b) of the Act. If the owner timely files the affidavit or declaration within the relevant filing period set forth in section 8(a) or section 8(b) of the Act, deficiencies may be corrected before the end of this filing period without paying a deficiency surcharge. Deficiencies may be corrected after the end of this filing period with payment of the deficiency surcharge required by section 8(c)(2) of the Act and §2.6.

(2) Correcting deficiencies in affidavits or declarations filed during the grace period. If the affidavit or declaration is filed during the six-month grace period provided by section 8(c)(1) of the Act, deficiencies may be corrected before the expiration of the grace period without paying a deficiency surcharge. Deficiencies may be corrected after the expiration of the grace period with payment of the deficiency surcharge required by section 8(c)(2) of the Act and §2.6.

(b) If the affidavit or declaration is not filed within the time periods set forth in section 8 of the Act, or if it is filed within that period by someone other than the owner, the registration will be cancelled. These deficiencies cannot be cured.

45. Revise §2.165 to read as follows:

§2.165 Petition to Commissioner to review refusal.

(a) A response to the examiner's initial refusal to accept an affidavit or declarationis required before filing a petition to the Commissioner, unless the examiner directs otherwise. See §2.163(b) for the deadline for responding to an examiner's Office action.

(b) If the examiner maintains the refusal of the affidavit or declaration, a petition to the Commissioner to review the action may be filed. The petition must be filed within six months of the mailing date of the action maintaining the refusal, or the Office will cancel the registration and issue a notice of the cancellation.

(c) A decision by the Commissioner is necessary before filing an appeal or commencing a civil action in any court.

46. Revise §2.166 to read as follows:

§2.166 Affidavit of continued use or excusable nonuse combined with renewal application.

An affidavit or declaration under section 8 of the Act and a renewal application under section 9 of the Act may be combined into a single document, provided that the document meets the requirements of both sections 8 and 9 of the Act.

47. Amend §2.167 by revising paragraph (c) to read as follows:

§2.167 Affidavit or declaration under section 15.

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(c) Recite the goods or services stated in the registration on or in connection with which the mark has been in continuous use in commerce for a period of five years after the date of registration or date of publication under section 12(c) of the Act, and is still in use in commerce;

*****

48. Revise §2.168 to read as follows:

§2.168 Affidavit or declaration under section 15 combined with affidavit or declaration under section 8, or with renewal application.

(a) The affidavit or declaration filed under section 15 of the Act may also be used as the affidavit or declaration required by section 8, if the affidavit or declaration meets the requirements of both sections 8 and 15.

(b) The affidavit or declaration filed under section 15 of the Act may be combined with an application for renewal of a registration under section 9 of the Act, if the requirements of both sections 9 and 15 are met.

49. Amend §2.173 by revising the heading and paragraph (a) to read as follows:

§2.173 Amendment of registration.

(a) The registrant may apply to amend the registration or to disclaim part of the mark in the registration. A written request specifying the amendment or disclaimer must be submitted. The request must be signed by the registrant and verified or supported by a declaration under §2.20, and accompanied by the required fee. If the amendment involves a change in the mark, a new specimen showing the mark as used on or in connection with the goods or services, and a new drawing of the amended mark, must be submitted. The certificate of registration or, if the certificate is lost or destroyed, a certified copy of the certificate, must also be submitted. The registration as amended must still contain registrable matter, and the mark as amended must be registrable as a whole. An amendment or disclaimer must not materially alter the character of the mark.

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50. Amend §2.181 by revising paragraph (a)(1) to read as follows:

§2.181 Term of original registrations and renewals.

(a)(1) Subject to the provisions of section 8 of the Act requiring an affidavit or declaration of continued use or excusable nonuse, registrations issued or renewed under the Act, prior to November 16, 1989, whether on the Principal Register or on the Supplemental Register, remain in force for twenty years from their date of issue or expiration, and may be renewed for periods of ten years from the expiring period unless previously cancelled or surrendered.

*****

51. Revise §2.182 to read as follows:

§2.182 Time for filing renewal application.

An application for renewal must be filed within one year before the expiration date of the registration, or within the six-month grace period after the expiration date of the registration. If no renewal application is filed within this period, the registration will expire.

52. Revise §2.183 to read as follows:

§2.183 Requirements for a complete renewal application.

A complete renewal application must include:

(a) A request for renewal of the registration, signed by the registrant or the registrant's representative;

(b) The fee required by §2.6 for each class;

(c) The additional fee required by §2.6 for each class if the renewal application is filed during the six-month grace period set forth in section 9(a) of the Act;

(d) If the registrant is not domiciled in the United States, the name and address of a United States resident on whom notices or process in proceedings affecting the registration may be served; and

(e) If the renewal application covers less than all the goods or services in the registration, a list of the particular goods or services to be renewed.

(f) If at least one fee is submitted for a multi-class registration, but the class(es) to which the fee(s) should be applied are not specified, the Office will issue a notice requiring either the submission of additional fee(s) or an indication of the class(es) to which the original fee(s) should be applied. Additional fee(s) may be submitted if the requirements of §2.185 are met. If the required fee(s) are not submitted and the class(es) to which the original fee(s) should be applied are not specified, the Office will presume that the fee(s) cover the classes in ascending order, beginning with the lowest numbered class.

53. Revise §2.184 to read as follows:

§2.184 Refusal of renewal.

(a) If the renewal application is not acceptable, the Office will issue a notice stating the reason(s) for refusal.

(b) A response to the refusal of renewal must be filed within six months of the mailing date of the Office action, or before the expiration date of the registration, whichever is later, or the registration will expire.

(c) If the renewal application is not filed within the time periods set forth in §9(a) of the Act, the registration will expire.

54. Add §2.185 to read as follows:

§2.185 Correcting deficiencies in renewal application.

(a) If the renewal application is filed within the time periods set forth in section 9(a) of the Act, deficiencies may be corrected, as follows:

(1) Correcting deficiencies in renewal applications filed within one year before the expiration date of the registration. If the renewal application is filed within one year before the expiration date of the registration, deficiencies may be corrected before the expiration date of the registration without paying a deficiency surcharge. Deficiencies may be corrected after the expiration date of the registration with payment of the deficiency surcharge required by section 9(a) of the Act and §2.6.

(2) Correcting deficiencies in renewal applications filed during the grace period. If the renewal application is filed during the six-month grace period, deficiencies may be corrected before the expiration of the grace period without paying a deficiency surcharge. Deficiencies may be corrected after the expiration of the grace period with payment of the deficiency surcharge required by section 9(a) of the Act and §2.6.

(b) If the renewal application is not filed within the time periods set forth in section 9(a) of the Act, the registration will expire. This deficiency cannot be cured.

55. Add §2.186 to read as follows:

§2.186 Petition to Commissioner to review refusal of renewal.

(a) A response to the examiner's initial refusal of the renewal application is required before filing a petition to the Commissioner, unless the examiner directs otherwise. See §2.184(b) for the deadline for responding to an examiner's Office action.

(b) If the examiner maintains the refusal of the renewal application, a petition to the Commissioner to review the refusal may be filed. The petition must be filed within six months of the mailing date of the Office action maintaining the refusal, or the renewal application will be abandoned and the registration will expire.

(c) A decision by the Commissioner is necessary before filing an appeal orcommencing a civil action in any court.

PART 3 - ASSIGNMENT, RECORDING AND RIGHTS OF ASSIGNEE

56. The authority citation for part 3 continues to read as follows:

authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

56a. Revise §3.16 to read as follows:

§3.16 Assignability of trademarks prior to filing of an allegation of use statement.

Before an allegation of use under either 15 U.S.C. 1051(c) or 15 U.S.C. 1051(d) is filed, an applicant may only assign an application to register a mark under 15 U.S.C. 1051(b) to a successor to the applicant's business, or portion of the business to which the mark pertains, if that business is ongoing and existing.

57. Amend §3.24 by revising the heading to read as follows:

§3.24 Requirements for documents and cover sheets relating to patents and patent applications.

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58. Add §3.25 to read as follows:

§3.25 Recording requirements for trademark applications and registrations.

(a) Documents affecting title. To record documents affecting title, a legible cover sheet (see §3.31) and one of the following must be submitted:

(1) The original document;

(2) A copy of the document;

(3) A copy of an extract from the document evidencing the effect on title; or

(4) A statement signed by both the party conveying the interest and the party receiving the interest explaining how the conveyance affects title.

(b) Name changes. Only a legible cover sheet is required (See §3.31).

(c) All documents. All documents submitted to the Office should be on white and non-shiny paper that is no larger than 8 1/2 x 14 inches (21.6 x 33.1 cm.) with a one-inch (2.5 cm) margin on all sides. Only one side of each page should be used.

59. Revise §3.28 to read as follows:

§3.28 Requests for recording.

Each document submitted to the Office for recording must include at least one cover sheet as specified in §3.31 referring either to those patent applications and patents, or to those trademark applications and registrations, against which the document is to be recorded. If a document to be recorded includes interests in, or transactions involving, both patents and trademarks, separate patent and trademark cover sheets should be submitted. Only one set of documents and cover sheets to be recorded should be filed. If a document to be recorded is not accompanied by a completed cover sheet, the document and the incomplete cover sheet will be returned pursuant to §3.51 for proper completion. The document and a completed cover sheet should be resubmitted.

60. Amend §3.31 by revising paragraphs (a) and (b) and by adding paragraphs (d) and (e) to read as follows:

§3.31 Cover sheet content.

(a) Each patent or trademark cover sheet required by §3.28 must contain:

(1) The name of the party conveying the interest;

(2) The name and address of the party receiving the interest;

(3) A description of the interest conveyed or transaction to be recorded;

(4) Identification of the interests involved:

(i) For trademark assignments and trademark name changes: Each trademark registration number and each trademark application number, if known, against which the Office is to record the document. If the trademark application number is not known, a copy of the application or a reproduction of the trademark must be submitted, along with an estimate of the date that the Office received the application; or

(ii) For any other document affecting title to a trademark or patent application, registration or patent: Each trademark or patent application number or each trademark registration number or patent against which the document is to be recorded;

(5) The name and address of the party to whom correspondence concerning the request to record the document should be mailed;

(6) The date the document was executed;

(7) An indication that the assignee of a trademark application or registration who is not domiciled in the United States has designated a domestic representative (see §3.61); and

(8) The signature of the party submitting the document.

(b) A cover sheet should not refer to both patents and trademarks, since any information, including information about pending patent applications, submitted with a request for recordation of a document against a trademark application or trademark registration will become public record upon recordation.

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(d) Each trademark cover sheet required by §3.28 seeking to record a document against a trademark application or registration should include, in addition to the serial number or registration number of the trademark, identification of the trademark or a description of the trademark, against which the Office is to record the document.

(e) Each patent and trademark cover sheet required by §3.28 should contain the number of applications, patents or registrations identified in the cover sheet and the total fee.

PART 6 - CLASSIFICATION OF GOODS AND SERVICES UNDER THE TRADEMARK ACT

61. The authority citation for part 6 continues to read as follows:

authority: 15 U.S.C. 1112, 1123; 35 U.S.C. 6, unless otherwise noted.

62. Revise §6.1 to read as follows:

§6.1 International schedule of classes of goods and services.

GOODS

1. Chemicals used in industry, science and photography, as well as in agriculture, horticulture and forestry; unprocessed artificial resins; unprocessed plastics; manures; fire extinguishing compositions; tempering and soldering preparations; chemical substances for preserving foodstuffs; tanning substances; adhesives used in industry.

2. Paints, varnishes, lacquers; preservatives against rust and against deterioration of wood; colorants; mordants; raw natural resins; metals in foil and powder form for painters, decorators, printers and mists.

3. Bleaching preparations and other substances for laundry use; cleaning, polishing, scouring and abrasive preparations; soaps; perfumery, essential oils, cosmetics, hair lotions; dentifrices.

4. Industrial oils and greases; lubricants; dust absorbing, wetting and binding compositions; fuels (including motor spirit) and illuminants; candles, wicks.

5. Pharmaceutical, veterinary, and sanitary preparations; dietetic substances adapted for medical use, food for babies; plasters, materials for dressings; material for stopping teeth, dental wax; disinfectants; preparations for destroying vermin; fungicides, herbicides.

6. Common metals and their alloys; metal building materials; transportable buildings of metal; materials of metal for railway tracks; nonelectric cables and wires of common metal; ironmongery, small items of metal hardware; pipes and tubes of metal; safes; goods of common metal not included in other classes; ores.

7. Machines and machine tools; motors and engines (except for land vehicles); machine coupling and transmission components (except for land vehicles); agricultural implements other than hand-operated; incubators for eggs.

8. Hand tools and implements (hand-operated); cutlery; side arms; razors.

9. Scientific, nautical, surveying, electric, photographic, cinematographic, optical, weighing, measuring, signalling, checking (supervision), life-saving and teaching apparatus and instruments; apparatus for recording, transmission or reproduction of sound or images; magnetic data carriers, recording discs; automatic vending machines and mechanisms for coin operated

apparatus; cash registers, calculating machines, data processing equipment and computers; fire extinguishing apparatus.

10. Surgical, medical, dental, and veterinary apparatus and instruments, artificial limbs, eyes, and teeth; orthopedic articles; suture materials.

11. Apparatus for lighting, heating, steam generating, cooking, refrigerating, drying, ventilating, water supply, and sanitary purposes.

12. Vehicles; apparatus for locomotion by land, air, or water.

13. Firearms; ammunition and projectiles; explosives; fireworks.

14. Precious metals and their alloys and goods in precious metals or coated therewith, not included in other classes; jewelry, precious stones; horological and chronometric instruments.

15. Musical instruments.

16. Paper, cardboard and goods made from these materials, not included in other classes; printed matter; bookbinding material; photographs; stationery; adhesives for stationery or household purposes; artists' materials; paint brushes; typewriters and office requisites (except furniture); instructional and teaching material (except apparatus); plastic materials for packaging (not included in other classes); playing cards; printers' type; printing blocks.

17. Rubber, gutta-percha, gum, asbestos, mica and goods made from these materials and not included in other classes; plastics in extruded form for use in manufacture; packing, stopping and insulating materials; flexible pipes, not of metal.

18. Leather and imitations of leather, and goods made of these materials and not included in other classes; animal skins, hides; trunks and travelling bags; umbrellas, parasols and walking sticks; whips, harness and saddlery.

19. Building materials (non-metallic); nonmetallic rigid pipes for building; asphalt, pitch and bitumen; nonmetallic transportable buildings; monuments, not of metal.

20. Furniture, mirrors, picture frames; goods (not included in other classes) of wood, cork, reed, cane, wicker, horn, bone, ivory, whalebone, shell, amber, mother-of-pearl, meerschaum and substitutes for all these materials, or of plastics.

21. Household or kitchen utensils and containers (not of precious metal or coated therewith); combs and sponges; brushes (except paint brushes); brush-making materials; articles for cleaning purposes; steel-wool; unworked or semi-worked glass (except glass used in building); glassware, porcelain and earthenware not included in other classes.

22. Ropes, string, nets, tents, awnings, tarpaulins, sails, sacks and bags (not included in other classes); padding and stuffing materials (except of rubber or plastics); raw fibrous textile materials.

23. Yarns and threads, for textile use.

24. Textiles and textile goods, not included in other classes; beds and table covers.

25. Clothing, footwear, headgear.

26. Lace and embroidery, ribbons and braid; buttons, hooks and eyes, pins and needles; artificial flowers.

27. Carpets, rugs, mats and matting, linoleum and other materials for covering existing floors; wall hangings (non-textile).

28. Games and playthings; gymnastic and sporting articles not included in other classes; decorations for Christmas trees.

29. Meat, fish, poultry and game; meat extracts; preserved, dried and cooked fruits and vegetables; jellies, jams, fruit sauces; eggs, milk and milk products; edible oils and fats.

30. Coffee, tea, cocoa, sugar, rice, tapioca, sago, artificial coffee; flour and preparations made from cereals, bread, pastry and confectionery, ices; honey, treacle; yeast, baking powder; salt, mustard; vinegar, sauces (condiments); spices; ice.

31. Agricultural, horticultural and forestry products and grains not included in other classes; live animals; fresh fruits and vegetables; seeds, natural plants and flowers; foodstuffs for animals; malt.

32. Beers; mineral and aerated waters and other nonalcoholic drinks; fruit drinks and fruit juices; syrups and other preparations for making beverages.

33. Alcoholic beverages (except beers).

34. Tobacco; smokers' articles; matches.

SERVICES

35. Advertising; business management; business administration; office functions.

36. Insurance; financial affairs; monetary affairs; real estate affairs.

37. Building construction; repair; installation services.

38. Telecommunications.

39. Transport; packaging and storage of goods; travel arrangement.

40. Treatment of materials.

41. Education; providing of training; entertainment; sporting and cultural activities.

42. Providing of food and drink; temporary accommodation; medical, hygienic and beauty care; veterinary and agricultural services; legal services; scientific and industrial research; computer programming; services that cannot be classified in other classes.

May 3, 1999

Q. TODD DICKINSON
Acting Assistant Secretary of Commerce and
Acting Commissioner of Patents and Trademarks

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR § 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR § 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before July 23, 1999.

Brown, Theatrice, 1101 3rd St., S.W., #311, Washington, DC 20024

Carman, Melissa K., 1011 Queen St., Alexandria, VA 22314

Jacobson, Dian C., 8368 Glastonbury Ct., Annandale, VA 22003

Weimar, Elizabeth C., 660 S. Harrison St., Arlington, VA 22204

May 7, 1999

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following list contains the names of persons who successfully passed the registration examination that was held August 26, 1998 and have been given provisional recognition pursuant to 37 CFR § 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR § 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before July 23, 1999.

Hollingshead, Robert J., 1813 Tilton Dr., Silver Spring, MD 20902

Rabin, Evelyn M., 11021 Ralston Rd., Rockville, MD 20852

May 7, 1999

KAREN L. BOVARD, Director
Office of Enrollment and Discipline

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

AMERICAN SALES CORP., DBA AMERICAN BENEFIT, Virginia Beach, VA, Reg. No. 1,798,829 for the mark "THE AMERICAN WHEY AND DESIGN" and 1,798,830, for the mark "THE AMERICAN WHEY", Can. No. 22,878.

Sunrise Video Superstores, Inc., Forest Hills, NY, Reg. No. 1,755,811 for the mark "SUNRISE VIDEO SUPERSTORES AND DESIGN", Canc. No. 28,609.

Destiny Technology Corp., Ossinger, NY, Reg. No. 1,757,588 for the mark "DELIVERYMAN", Canc. No. 27,561.

Xexex Industries, Inc., Norwalk, CT, Reg. No. 1,185,598 for the mark "TEST TRAX", Canc. No. 27,398.

BST Enterprises Inc., Mesa, AZ, Reg. No. 1,815,809 for the mark "ABS BRAKESAFE AND DESIGN", Canc. No. 28,694.

LATOYA JOHNSON
Paralegal
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Patents Available for License or Sale

D. 359,669	DUAL DRIVE SOCKET
Contact:	John S. Paniaguas Fitch, Even, Tabin & Flannery 120 South LaSalle St., Ste. 1600 Chicago, IL 60603-4277 (voice) : (312) 577-7000
D. 397,575	ROSE SHAPED CUSHION
Contact:	Florian Dove Miller P.O. Box 1291 Walla Walla, WA 99362 (voice) : (509) 526-0414
4,949,647	COLLAPSIBLE PLATFORM ASSEMBLY
Contact:	Norma Grant 6772 Castleton Dr. Clemmons, NC 27102 (voice) : (336) 766-1787 (fax) : (336) 766-1787
4,977,849	VEHICLE IN DISTRESS FLAG
Contact:	Alice R. Brinton 3200 Lockheed Blvd. Apartment 102 Alexandria, VA 22306 (voice) : (703) 768-5849
5,242,355	EXERCISE APPARATUS
Contact:	Kathy Costa P.O. Box 11240 Glendale, AZ 85318 (voice) : (623) 780-8870
5,669,314	MOTORIZED COLLAPSIBLE PLATFORM ASSEMBLY
Contact:	Norma Grant 6772 Castleton Dr. Clemmons, NC 27102 (voice) : (336) 766-1787 (fax) : (336) 766-1787
5,804,594	PHARMACEUTICAL COMPOSITIONS AND METHODS FOR IMPROVING WRINKLES AND OTHER SKIN CONDITIONS
Contact:	Dr. Howard Murad Murad, Inc. 2121 Rosecrans Ave., 5th Floor El Segundo, CA 90245-4709 (voice) : (310) 726-3340 (fax) : (310) 726-3212

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,975,411, Gordon T. Danby, Charles E. Brukl, Lawrence A. Minkoff, SUPERCONDUCTORS AND METHODS OF MAKING SAME, Interference No. 104,015, final judgment adverse to the patentee rendered April 22, 1999, as to claims 1-17.

Patent No. 4,841,325, Kunihisa Hoshino, (deceased), Chie Hoshino, Yoshinari Hamanishi, Ken Utagawa, AUTOMATIC FOCUSING DEVICE FOR CAMERA, Interference No. 103,208, final judgment adverse to the patentee rendered September 30, 1998, as to claims 1-14.

Patent No. 4,997,903, Masaya Okamoto, POLYCARBONATE-MADE OPTICAL ARTICLE, Interference No. 103,272, final judgment adverse to the patentee rendered September 30, 1998, as to claims 1-7.

Patent No. 5,097,276, Masaru Midorikawa, INK JET HEAD CAPPING DEVICE, Interference No. 103,736, final judgment adverse to the patentee rendered May 12, 1997, as to claims 1-11.

Patent No. 5,109,958, Kunio Kato, Yasumasa Iida, Takenobu Honda, Kazuhiko Sugita, Shinji Yamasaki, BRAKE UNIT FOR AN ELEVATOR HOIST APPARATUS, Interference No. 103,501, final judgment adverse to the patentees rendered January 23, 1997, as to claims 1-3.

Patent No. 5,242,044, Shoichi Yamaguchi, Hisashi Shimizu, APPARATUS FOR ROTATING AND CONVEYING AN

ARTICLE TO BE PAINTED ON COATING LINE, Interference No. 103,705, final judgment adverse to the patentees rendered February 4, 1997, as to claim 1.

Patent No. 5,315,636, Rajendra Patel, PERSONAL TELECOMMUNICATIONS SYSTEM, Interference No. 104,166, final judgment adverse to the patentee rendered February 3, 1999, as to claims 11, 13, 14, 18, 19 and 25.

Patent No. 5,382,743, James H. Beech, Jr., Roland B. Saeger, Robert A. Ware, SKELETAL ISOMERIZATION OF N-PENTENES USING ZSM-35 IN THE PRESENCE OF HYDROGEN, Interference No. 103,902, final judgment adverse to the patentees rendered March 4, 1999, as to claims 1-13.

Patent No. 5,385,915, Joseph D. Buxbaum, Samuel E. Gandy, Paul Greengard, TREATMENT OF AMYLOIDOSIS ASSOCIATED WITH ALZHEIMER DISEASE USING MODULATORS OF PROTEIN PHOSPHORYLATION, Interference No. 103,915, final judgment adverse to the patentee rendered April 19, 1999, as to claims 33, 35 and 36.

Patent No. 5,512,436, Timothy Stone, ENHANCEMENT OF POLYNUCLEOTIDE HYBRIDIZATION, Interference No. 103,849, final judgment adverse to the patentee rendered January 30, 1998, as to claims 1-14.

Patent No. 5,697,929, Phillip A. Mellinger, SELF-LIMITING SET SCREW FOR USE WITH SPINAL IMPLANT SYSTEMS, Interference No. 104,246, final judgment adverse to the patentee rendered April 27, 1999, as to claims 1-14 and 15-21.

WANDA M. TIGNER
Sup'v Legal Instruments Examiner
Board of Patent Appeals & Interferences
(703) 308-9797

Certificates of Correction for June 8, 1999

D. 384,829	5,648,555	5,738,538	5,771,334
D. 393,624	5,654,154	5,743,367	5,771,869
D. 394,927	5,654,171	5,746,143	5,772,241
D. 401,172	5,654,356	5,747,278	5,772,499
D. 402,588	5,656,553	5,748,969	5,772,754
D. 403,616	5,660,143	5,750,738	5,773,953
D. 404,297	5,660,547	5,751,512	5,774,231
D. 404,970	5,662,322	5,752,101	5,774,389
Re. 36,088	5,665,609	5,752,131	5,774,901
5,023,094	5,678,230	5,753,600	5,775,321
5,056,550	5,688,831	5,754,343	5,776,786
5,059,591	5,691,292	5,755,092	5,777,079
5,091,402	5,696,949	5,756,754	5,777,175
5,219,010	5,698,737	5,756,821	5,777,392
5,290,816	5,701,533	5,757,683	5,777,489
5,379,303	5,701,601	5,759,536	5,777,802
5,399,365	5,704,123	5,760,561	5,778,001
5,433,894	5,705,520	5,761,555	5,780,150
5,463,169	5,706,312	5,762,800	5,780,663
5,562,958	5,706,688	5,763,326	5,763,417
5,567,318	5,707,318	5,763,396	5,783,483
5,567,842	5,710,745	5,763,440	5,783,634
5,571,311	5,711,959	5,764,291	5,783,701
5,590,528	5,714,991	5,764,982	5,783,946
5,595,761	5,716,661	5,766,003	5,784,043
5,602,563	5,718,081	5,766,299	5,784,593
5,605,877	5,718,085	5,766,849	5,785,747
5,609,234	5,719,028	5,767,560	5,786,813
5,610,013	5,722,644	5,767,750	5,786,902
5,615,784	5,729,049	5,768,567	5,787,507
5,624,647	5,731,658	5,769,920	5,788,334
5,624,939	5,731,867	5,770,625	5,788,385
5,627,949	5,733,897	5,770,712	5,788,754
5,635,370	5,735,046	5,771,024	5,788,848
5,635,494	5,736,288	5,771,317	5,789,221
5,789,393	5,818,806	5,847,211	5,861,492
5,789,520	5,818,825	5,848,006	5,861,556
5,790,223	5,818,970	5,848,994	5,861,578
5,790,715	5,820,011	5,849,462	5,881,762
5,793,341	5,820,050	5,849,565	5,861,829
5,793,452	5,820,201	5,849,635	5,862,002
5,795,705	5,820,293	5,849,900	5,862,233
5,795,736	5,820,541	5,850,030	5,863,415
5,796,106	5,820,746	5,850,289	5,863,750
5,796,227	5,820,755	5,850,571	5,864,005
5,796,415	5,821,430	5,850,892	5,864,086
5,797,977	5,822,551	5,850,903	5,864,252
5,797,999	5,822,879	5,851,373	5,864,281
5,798,151	5,823,356	5,851,767	5,864,283
5,793,153	5,823,570	5,851,800	5,864,418
5,7984,00	5,823,643	5,852,397	5,864,533
5,798,876	5,824,188	5,853,365	5,864,623
5,798,892	5,824,437	5,853,547	5,864,977
5,798,919	5,824,587	5,853,573	5,865,033
5,800,939	5,825,415	5,854,067	5,866,576
5,801,865	5,825,519	5,854,087	5,866,862
5,803,286	5,825,560	5,854,225	5,866,888
5,804,183	5,825,931	5,854,583	5,866,980
5,804,382	5,826,932	5,854,610	5,867,327
5,805,149	5,827,234	5,854,976	5,867,347
5,805,933	5,827,677	5,855,014	5,867,358
5,806,654	5,827,790	5,255,074	5,867,564
5,807,124	5,827,871	5,855,299	5,867,625
5,808,211	5,827,897	5,855,905	5,867,632
5,808,707	5,827,924	5,856,187	5,868,237
5,809,363	5,828,430	5,856,376	5,868,777
5,810,121	5,828,496	5,856,587	5,869,264
8,810,477	5,828,777	5,856,693	5,869,931
5,810,781	5,829,773	8,856,801	5,870,031
5,810,923	5,830,117	5,856,889	5,870,257
5,811,036	5,830,583	5,857,167	5,871,024
5,811,239	5,830,934	5,857,364	5,871,113
5,811,749	5,831,084	5,857,527	5,871,242
5,811,843	5,831,180	5,857,747	5,871,358
5,812,283	5,831,386	5,858,002	5,871,987
5,812,565	5,833,034	5,858,379	5,872,376
5,812,778	5,833,802	5,858,508	5,872,840
5,812,899	5,836,712	5,858,927	5,873,094
5,812,912	5,837,334	5,858,971	5,874,562
5,813,848	5,838,494	5,859,090	5,879,675
5,814,190	5,838,609	5,859,258	5,880,757
5,814,300	5,838,723	5,859,297	5,881,124
5,814,378	8,839,910	5,859,824	5,882,190
5,814,669	5,842,011	5,860,470	5,882,901
5,815,460	5,842,267	5,860,623	5,884,446
5,815,588	5,843,382	5,860,682	5,885,882
5,817,491	5,843,957	5,860,756	5,886,094
5,817,590	5,844,107	5,861,137	5,888,089
5,818,223	5,846,842	5,861,169	5,888,583
5,818,537	5,847,020	5,861,208	5,889,470
5,818,609	5,847,159	5,861,294	

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

April 19-23, 1999

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
4-19	EX	75/111,023	Industrial Communications and Electronics, Inc.	genericness (whether matter asserted for registration is capable of registration on the Supplemental Register)	Refusal Reversed		"INDUSTRIAL COMMUNICATIONS" [communication tower construction and maintenance services]		No
4-21	OPP	102,008	Rush North Shore Medical Center v. Advocate Health Care Network	2(d)	Opposition Dismissed	"NEW ATTITUDE" [publications and health care services]	"HEALTHCARE WITH A WHOLE NEW ATTITUDE" [health care services and hospital services]		No
4-21	OPP	105,510	Zarr Men L.A., Inc. v. Henry Duarte	2(d); whether applicant was the owner of the mark at the time he filed his application to register	Opposition Sustained (on both grounds)	"LORDS" [retail and wholesale clothing store services; clothing]	"LORDS" [clothing, namely, shirts, trousers, jackets, sweaters, and shoes]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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2900	Designs			12/15/93
1620	Immunology & plants	Mary C. Lee	308-2359	05/01/97
1640	Combinatorial, linker & non-heterocyclic *chemistry*		308-8494	10/09/96
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1650	Non-recombinant molecular & micro-biology, non-immuno proteins & peptides			01/30/98
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1710	Synthetic resins	Jacqueline M. Stone	308-1495	04/04/97
1770	Stock materials & miscellaneous articles	(Acting Director)	305-3599	01/18/97
1720	Fluid separation & agitation, metal foundry, welding, plastic molding apparatus, fuels & related compositions	Richard V. Fisher	308-1193 305-3599	02/20/97
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1760	Food technology, petroleum processing, coating & etching			06/04/96
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2750	Storage processing, multiple computers, & multiple process coordinating	Robert E. Garrett	305-0286 308-2177	07/08/96
2760	Electronic commerce and specialized data processing	*Joseph J. Rolla*	*305-9700* 308-5355	*07/08/96*
2770	Computer graphics & data bases	Gerald Goldberg	305-9700 308-5355	07/03/96

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2780	Processors, control systems, input/ output	Joseph J. Rolla	305-9700 308-5355	08/15/96
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2810	Semiconductors, electrical circuits, static memory, digital logic	Rolf G. Hille	306-3421 308-7725	07/01/96
2820	Semiconductors & electrical circuits			03/21/97
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2850	Photocopying, recorders, printing, measuring & testing	Margaret A. Focarino	306-3421 308-7725	08/30/96
2870	Liquid crystals, optical elements, optical systems, fiber optics, lasers, electric lamps, registers, optics, measuring & radiant energy	Janice A. Howell	308-0530 305-3594	09/21/96
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3620	Static structures, closures, machine elements & power transmissions, civil engineering, connections, hardware & furniture	Al Lawrence Smith	308-1020 305-3597	02/25/97
3630	Supports & sign exhibiting			06/27/97
3640	Aeronautics, agriculture, earth moving/working, petroleum & mining, plant & animal husbandry, butchering, optics, radio wave & acoustic wave communication, data processing for vehicles, weaponry, nuclear systems & national security	John F. Terapane, Jr.	306-4180 306-4195	12/07/95
3700	**MECHANICAL ENGINEERING, MANUFACTURING AND PRODUCTS**			
3710	Amusement and education devices	Ethel Rollins-Cross	308-1078	10/24/96
3720	Packages, containers, manufacturing devices & processes, machine tools & hand tools		305-3579	12/26/96
3730	Medical instruments, diagnostic equipment, treatment devices, surgery & surgical supplies	John J. Love	308-0873 305-3139	12/02/96
3740	Thermal & combustion technology, motive and fluid power systems, textile manufacturing & apparel	Donald G. Kelly	308-0975 308-7763	11/22/96
3750	Fluid handling & dispensing			11/22/96

TRADEMARK OPERATION

Q. Todd Dickinson, Acting Commissioner of Patents and Trademarks
Robert M. Anderson, Acting Assistant Commissioner for Trademarks
Condition of Trademark Applications as of May 1, 1999

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Jerry Price, Managing Attorney, (703) 308–9101—North Tower, 10th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/25/99	01/11/99
Law Office 102—Thomas Shaw, Managing Attorney, (703) 308–9102—South Tower, 5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/09/98	02/16/99
Law Office 103—Michael A. Szoke, Managing Attorney, (703) 308–9103—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/14/98	01/29/98
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—South Tower, 6th Floor, Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/21/98	02/08/99
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—South Tower, 6th Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/05/98	01/26/99
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—South Tower, 7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/02/98	01/13/99
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—South Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/22/98	02/05/99
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—South Tower, 8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/02/98	11/30/98
Law Office 109—Ronald Sussman, Managing Attorney, (703) 308–9109—South Tower, 8th Floor, Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/28/98	01/18/99
Law Office 110—Christopher A. F. Pedersen, Managing Attorney, (703) 308–9110—South Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/21/98	01/22/99
Law Office 111—Craig Taylor, Managing Attorney, (703) 308–9111—North Tower, 10th Floor, Foods, Beverages, Wines & Spirits—Int. Classes 20, 30, 31, 32, 33 *Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42*	*12/31/98*	*01/25/99*
Law Office 112—Janice O'Lear, Managing Attorney, (703) 308–9112—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9,20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/09/98	02/08/99
Law Office 113—Meryl Hershkowitz, Managing Attorney, (703) 308–9113—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9,20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/14/98	01/28/99
Law Office 114—Mary Frances Bruce, Managing Attorney, (703) 308–9114—South Tower, *6th Floor, Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms,* Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/27/98	10/01/98
Law Office 115—Tomas Vlcek, Managing Attorney, (703) 308–9115—North Tower, 3rd Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/01/98	11/27/98

**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Sims, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—(703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	12/16/98	—0—
Renewals (All Classes)	03/19/99	—0—
Section 12(c) Publications (All Classes)	12/15/98	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

JUNE 8, 1999

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,302,790 (3776th)

MAGNETIC RECORDING HEAD WITH EFFECTIVE MAGNETIC GAP LENGTH LESS THAN ABOUT 15μ INCHES

James U. Lemke, Del Mar, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

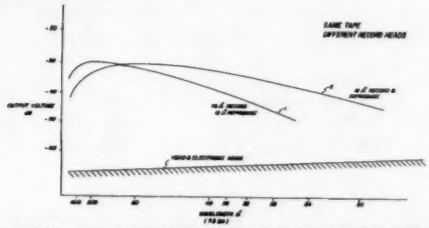
Reexamination Request No. 90/003,108, Jun. 28, 1993, 90/003,515, Aug. 2, 1994.

Reexamination Certificate for Patent 4,302,790, issued Nov. 24, 1981, Appl. No. 29,095, Apr. 11, 1979.

This patent is subject to a terminal disclaimer

Int. Cl.[6] **G11B** *5/23;5/62*

U.S. Cl. 360—119



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–12**, are cancelled.

1. In magnetic recording apparatus of the type having

(a) a gapped magnetic head for recording information signals in a magnetic medium,

(b) means for providing relative motion between said head and said medium, and

(c) means for applying information signals to said head for the recording of said signals in said medium,

the improvement wherein said head has an effective magnetic record gap length of less than about 15μ", said gap lying so that its length extends in the direction of relative motion between said head and medium.

B2 4,425,481 (3777th)

PROGRAMMABLE SIGNAL PROCESSING DEVICE

Stephan Mansgold, Mölnlycke; Arne Leijon, and Björn Israelsson, both of Göteborg, all of Sweden, assignors to Resound Corporation, Redwood City, Calif.

Reexamination Request No. 09/003,399, Apr. 15, 1994, 90/004,231, Apr. 24, 1996, 90/004,754 Jul. 3, 1997.

Reexamination Certificate for Patent 4,425,481, issued Jan. 10, 1984, Appl. No. 368,456, Apr. 14, 1982.

Reexamination Certificate B1 4,425,481, issued Jul. 12, 1994.

Claims priority, application Sweden, Apr. 16, 1981, 8102466

Int. Cl.[6] **H04R** *25/00*

U.S. Cl. 381—317

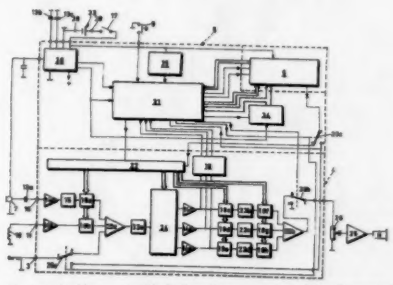
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **5** was previously cancelled.

Claims **1–4**, **6** are determined to be patentable as amended.

Claims **7–45** are added and determined to be patentable.

1. A programmable wearable hearing aid adapted to be used by a person having impaired hearing in a plurality of different sound environments, comprising:



an electronically controlled signal processor with adequate functions for processing a complex input signal [containing] *including* information such as speech or music from a sound environment according to a unique *and electrically alterable* signal process, *said electronically controlled signal processor including a frequency separating circuit which separates said input information into different frequency bands, and a selective gain circuit, which adjusts gain of said different frequency bands*;

a memory arranged to store at least two sets of digital information/data, each of said at least two sets of digital information/data *including first and second items of information/data which has information to* [being programmed to compensate for hearing impairment of said person and for a different one of said plurality of sound environments] *adjust a frequency cutoff of said frequency separating circuit, and gain in the frequency bands defined by said frequency cutoff*;[,] and

a control unit *which selects one of said sets of digital information/data and commands an entirety of said one set* [to transmit one of said at least two sets] of digital information/data *to be transmitted* from the memory to the signal processor, to *adjust* [bring about] said unique signal process [adjusted] to *both* a particular one of said different sound environments *and said hearing impairment by adjusting said frequency separating circuit and said selective gain circuit;*

[,to bring about said unique signal process adjusted to a particular one of said different sound environments;]

said programmable hearing aid being wearable by said person.

B1 4,518,422 (3778th)

PROCESS AND APPARATUS FOR REFINING STEEL IN A METALLURGICAL VESSEL

Paul Metz, Luxembourg, Luxembourg, assignor to Paul Wurth S.A., Luxembourg, Luxembourg

Reexamination Request No. 90/004,983, May 7, 1998.

Reexamination Certificate for Patent 4,518,422, issued May 21, 1985, Appl. No. 552,413, Nov. 16, 1983.

Claims priority, application Luxembourg, Nov. 17, 1982, 84472

Int. Cl.[6] **C21C** *7/076;* **C22B** *9/10*

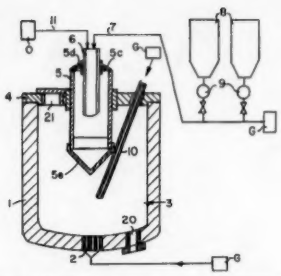
U.S. Cl. 75—540

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **18** to **33** and **35** to **41** is confirmed.

Claim **34** is cancelled.

Claims **1** and **6** are determined to be patentable as amended.



Claims **2** to **5** and **7** to **17**, dependent on an amended claim, are determined to be patentable.

1. A process for refining steel in a metallurgical vessel having a metal melt therein, said melt having a *surface with a* first slag thereon, including the steps of:

separating said first slag on said melt to define a working zone;

delivering a combustible material to **[**a**]** *said* working zone at an impact point at the surface of said melt;

delivering oxygen to said working zone at said impact point whereby a highly reactive second slag is produced therein; and

mixing said melt whereby heat is evenly distributed therethrough.

B 4,565,917 (3779th)

MULTI-ZONE THERMAL PROCESS SYSTEM UTILIZING NONFOCUSED INFARED PANEL EMITTERS

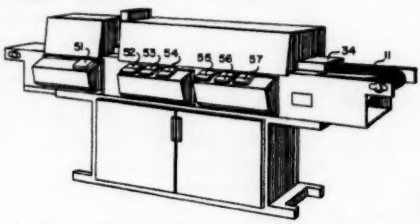
Edward J. Furtek, Salisbury, Mass., assignor to Vitronics Corporation, Newmarket, N.H.

Reexamination Request No. 90/003,396, Apr. 14, 1994.

Reexamination Certificate for Patent 4,565,917, issued Jan. 21, 1986, Appl. No. 572,163, Jan. 18, 1984.

Int. Cl.[6] **F27B** *9/06*

U.S. Cl. 219—388



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **4**, **5**, **8**, **9**, and **12–17** is confirmed.

Claims **1–3**, **6**, **7**, **10**, and **11** are cancelled.

12. A multi-zone thermal process apparatus utilizing nonfocused infrared panel emitters for accomplishing reflow soldering of surface mounted devices to printed circuit boards, said apparatus comprising:

an insulated housing;

means for moving at least one printed circuit board with devices thereon to be soldered thereto through said housing from a first end to a second end;

a first zone disposed within said housing adjacent said first end and having one nonfocused infrared panel emitter having an emitting surface for emitting infrared radiation at a first predetermined peak wavelength which is more readily absorbed by the board than by the devices disposed thereon;

a second zone disposed adjacent said first zone within said housing having means for cooling said board and said devices;

a third zone disposed adjacent said second zone within said housing and having two nonfocused infrared panel emitters disposed on opposite sides of said moving means, each of said panel emitters having an emitting surface for emitting infrared radiation at a second predetermined wavelength which is more readily absorbed by the board than by the devices thereon;

a fourth zone disposed adjacent said third zone within said housing and having two nonfocused infrared panel emitters disposed on opposite sides of said moving means, each of said panel emitters having an emitting surface for emitting infrared radiation at a third predetermined peak wavelength which is more readily absorbed by the board than by the devices disposed thereon;

a fifth zone disposed adjacent said fourth zone within said housing and having two nonfocused infrared panel emitters disposed on opposite sides of said moving means, each of said panel emitters having an emitting surface for emittig infrared radiation having a fourth predetermined peak wavelength which is more readily absorbed by the board than by the devices disposed thereon; and

a sixth zone adjacent said fifth zone having second means for cooling said moving means and the board disposed thereon, said sixth zone being disposed adjacent said second end of said housing.

B1 4,922,936 (3780th)

DENTAL CLEANER

Carlo A. Buzzi; Ulrich A. Saxer, both of Zürich, and Paul A. Stäger, Effretikon, all of Switzerland, assignors to Ulrich Peter Saxer, Zurich; Walter Koller, Waldkirch, and Franz Aschwanden, Gersau, all of Switzerland

Reexamination Request No. 90/004,820 Oct. 29, 1997.

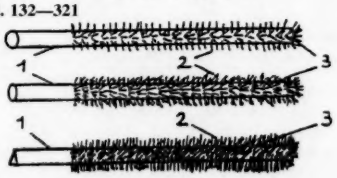
Reexamination Certificate for Patent 4,922,936, issued May 8, 1990, Appl. No. 187,522, Apr. 11, 1988.

PCT No. PCT/CH87/00097, § 371 Date Apr. 11, 1988, § 102(e) Date Apr. 11, 1988, PCT Pub. No. WO88/01154, PCT Pub. Date Feb. 25, 1988

Claims priority, application Switzerland, Aug. 14, 1986, 3283/86

Int. Cl.[6] **A61C** *15/00*

U.S. Cl. 132—321



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–11** having been finally determined to be unpatentable, are cancelled.

[1. A method of making a dental cleaner in the nature of a toothpick in which an elongated rigid support is at least partially covered with bristles, the method comprising,

providing a rigid stable support, and

placing plastic bristles which are in the nature of flock on the support by flocking.**]**

B1 5,203,108 (3781st)

METHOD AND DEVICE FOR HEAT KILLING INSECTS IN BULK PRODUCE CONTAINERS

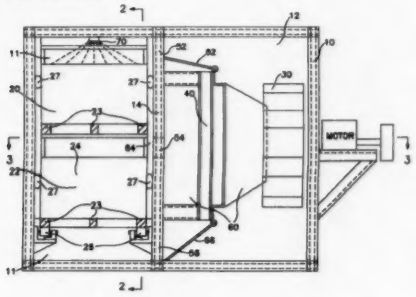
Martin W. Washburn, Jr., R.R. 1, Box 313A, Morgan Hill, Calif. 95037

Reexamination Request No. 90/004,439, Oct. 31, 1996.

Reexamination Certificate for Patent 5,203,108, issued Apr. 20, 1993, Appl. No. 708,358, May 31, 1991.

Int. Cl.[6] **A01M** *19/00*

U.S. Cl. 43—130



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **27–28** are cancelled.

Claim **1** and **25** are determined to be patentable as amended.

Claims **2–24** and **26**, dependent on an amended claim, are determined to be patentable.

New claims **29–30**, **31**, **32** and **33**, **34** are added and determined to be patentable.

1. An apparatus for killing insects in produce, which comprises:

an outer container;

means for dividing a space enclosed by said outer container into first and second internal chambers;

first and second air passage means for allowing passage of air between said first internal chamber and said second internal chamber;

means for circulating air from said second internal chamber successively through one of said air passage means, said first internal chamber, the other of said air passage means, and back into said second internal chamber;

means for heating said circulating air while maintaining relative humidity in said first internal chamber below 75%; and

means for supporting at least one bulk produce bin in said first internal chamber so that sides of said bin contact surfaces of said first internal chamber or surfaces of additional bins in said chamber, wherein contacting surfaces and bin sides block passage of air through said first internal chamber **[**expect**]** *except* for passage through said bin or bins in said first internal chamber *thereby causing at least 80% of said air to pass through said bin or bins.*

REISSUES

JUNE 8, 1999

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 36,222

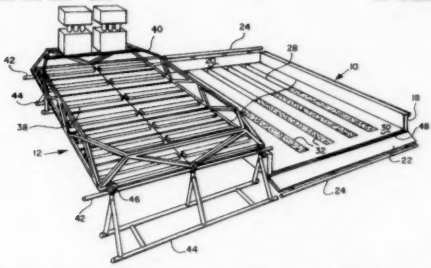
CONTAMINANT EXTRACTOR AND METHOD

Jeffrey K. O'Ham, Charlotte, N.C., assignor to McLaren Hart Environmental Engineering Corporation, Rancho Cordova, Calif.

Original No. 5,127,343, dated Jul. 7, 1992, Appl. No. 778,346, Oct. 16, 1991. Application for reissue Jul. 6, 1994, Appl. No. 271,401.

Int. Cl.[6] **F23B** *7/00*

U.S. Cl. 110—233 **27 Claims**



22. A method for removing organic contaminants from soil, comprising placing the soil in an open container, heating the soil and the entrained organic contaminants by directing heat against the soil;

creating a sub-atmospheric pressure within the soil by establishing a vacuum beneath the soil;

vaporizing the contaminants within the soil;

removing the vaporized contaminants downwardly from the soil; and

withdrawing the vaporized contaminants from beneath the soil.

Re. 36,223

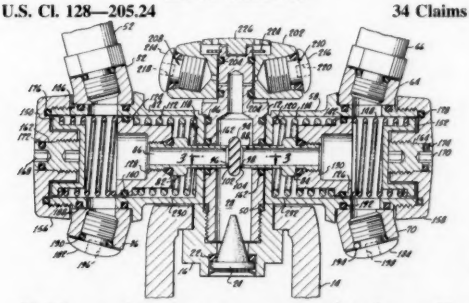
FIRST STAGE SCUBA REGULATOR

Manfred Schuler, 17462 Wayne Ave., Irvine, Calif. 92714

Original No. 5,379,761, dated Jan. 10, 1995, Appl. No. 96,011, Jul. 21, 1993. Application for reissue Jan. 10, 1997, Appl. No. 781,648.

Int. Cl.[6] **A62B** *9/02*

U.S. Cl. 128—205.24 **34 Claims**



31. A freeze resistant first stage pressure regulator for use with a high pressure source of breathable gas, the regulator comprising:

a housing;

means for attaching said housing to a high pressure source of breathable gas;

a pressure regulated outlet;

a valve seat;

a piston;

spring means for biasing said piston in order to effect a regulated valve opening between the piston and the valve seat and provide a pressure regulated supply of breathable gas to said pressure regulated outlet, said spring means, piston and valve seat being sealed within said housing;

antifreeze fluid means, sealed within said housing, for preventing icing and corrosion of the spring means and piston; and

pressure transfer means, disposed in a wall of said housing and in fluid communication with said antifreeze fluid means, for equalizing pressure between ambient water and said antifreeze fluid means.

Re. 36,224

MICROWAVE PLASMA PROCESSING PROCESS AND APPARATUS

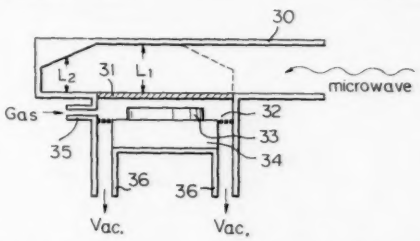
Shuzo Fujimura, Chiba; Toshimasa Kisa, Miyazaki, and Yasunari Motoki, Kita-kyushu, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Original No. 5,364,519, dated Nov. 15, 1994, Appl. No. 54,609, Apr. 30, 1993. Continuation of application No. 07/604,343, Oct. 25, 1990, abandoned, which is a continuation of application No. 07/153,234, Jun. 4, 1990, abandoned, which is a continuation of application No. 07/416,002, Oct. 2, 1989, abandoned, which is a continuation of application No. 07/150,446, Feb. 1, 1988, abandoned, which is a continuation of application No. 07/016,513, Feb. 17, 1987, abandoned, which is a continuation of application No. 06/802,332, Nov. 27, 1985, abandoned. Application for reissue Nov. 15, 1996, Appl. No. 749,654.

Claims priority, application Japan, Nov. 30, 1984, 59-252909

Int. Cl.[6] **H01L** *21/00;* **C23C** *16/50*

U.S. Cl. 204—192.15 **31 Claims**



2. A microwave plasma processing apparatus in which material is to be processed using microwaves received by said microwave plasma processing apparatus, comprising:

a reactor for plasma processing therein, having a stage for holding the material to be processed;

a waveguide for transferring the microwaves in a propagating direction within the waveguide; and

a dielectric window, having first and second surfaces substantially parallel with the propagating direction of the microwaves adjacent said dielectric window, said first surface formed coplanar with an inner surface of said waveguide and said second surface forming part of an inner surface of said reactor.

Re. 36,225

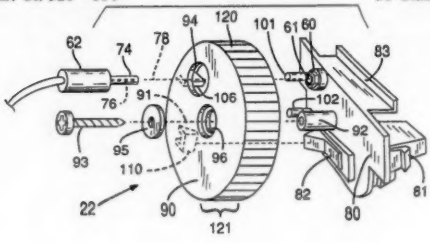
BATTERY RECHARGE INTERCONNECTION SYSTEM *WITH SAFETY CUT-OUT*

Timothy S. Harris, Fort Wayne, Ind., assignor to Mattel, Inc., El Segundo, Calif.

Original No. 5,229,703, dated Jul. 20, 1993, Appl. No. 833,320, Feb. 10, 1992. Application for reissue Jul. 20, 1995, Appl. No. 504,601.

Int. Cl.[6] **H01M** *10/46;* **H02J** *7/00*

U.S. Cl. 320—104 **31 Claims**



17. A battery recharge interconnection system for an electric children's riding vehicle powered by at least one rechargeable battery, comprising:

a cut-out switch operatively connected to the vehicle wiring for rendering the vehicle inoperable when the cut-out switch is engaged and for permitting operation of the vehicle when the cut-out switch is disengaged,

a charger receptacle operatively connected to the rechargeable battery of the vehicle for mating with an external recharger to recharge the battery, and

a movable receptacle cover on the vehicle operatively connected to the cut-out switch and movable to a first position in which the cut-off switch is dis-engaged to permit the operation of the vehicle, and a second position in which the cut-off switch is engaged to prevent operation of the vehicle, whereby the vehicle is inoperable during recharging of the battery.

Re. 36,226

MODULAR SYSTEM FOR OBTAINING EQUIPPED WALLS AND WORKBENCHES IN PARTICULAR FOR USE IN LABORATORIES

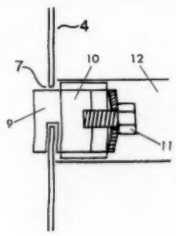
Buzzi Antonio, Busto Arsizio, Italy, assignor to Wright Line, Inc., Worcester, Mass.

Original No. 5,212,915, dated May 25, 1993, Appl. No. 770,629, Oct. 3, 1991. Application for reissue May 24, 1995, Appl. No. 448,695.

Claims priority, application Italy, Nov. 21, 1990, 22132 A-90

Int. Cl.[6] **E04H** *1/00*

U.S. Cl. 52—79.1 **13 Claims**



13. A modular equipped wall and workbench system comprising:

a plurality of uprights defining slots;

a plurality of crosspieces connected to said plurality of uprights; and

C-shaped holder means for connecting said plurality of uprights to said plurality of said crosspieces, said C-shaped holder means having a C-like shape attached on one side to an end of said crosspieces, and including legs of said C-like shape extending beyond said end, said legs including catch means for engaging with slots of said plurality of uprights, said C-shaped holder means also including a block and screw means for sliding said block against said uprights, and locking said catch means in position with said slots of said upright.

PLANT PATENTS

GRANTED JUNE 8, 1999

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,941

HIBISCUS PLANT NAMED 'DESERT WIND'

Wendy R. Bergman, Lehigh Acres, Fla., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 29, 1997, Appl. No. 995,355

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—67.8 **1 Claim**

1. A new and distinct Hibiscus plant named 'Desert Wind', as illustrated and described.

10,942

HIBISCUS PLANT NAMED 'VELVET WIND'

Wendy R. Bergman, Lehigh Acres, Fla., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 22, 1997, Appl. No. 995,358

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—257 **1 Claim**

1. A new and distict Hibiscus plant named 'Velvet Wind', as illustrated and described.

10,943

CHRYSANTHEMUM PLANT NAMED 'EMPIRE NOSTALGIA'

Janet S. Fuess, 22 Country Club Dr., New York Mills, N.Y. 13417

Filed Nov. 12, 1997, Appl. No. 968,246

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant named 'Empire Nostalgia', as illustrated and described.

10,944

CHRYSANTHEMUM PLANT NAMED 'EMPIRE CALICO'

Janet S. Fuess, 22 Country Club Dr., New York Mills, N.Y. 13417

Filed Nov. 12, 1997, Appl. No. 968,245

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Empire Calico', as illustrated and described.

10,945

CHRYSANTHEMUM PLANT NAMED 'EMPIRE SUNSHINE'

Janet S. Fuess, 22 Country Club Dr., New York Mills, N.Y. 13417

Filed Dec. 15, 1997, Appl. No. 990,232

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Empire Sunshine', as illustrated and described.

10,946

MINIATURE ROSE PLANT NAMED 'KAY DENISE'

Cecilia Lucy Daphene Bennett, deceased, late of Chula Vista, Calif., and by Susan Mae O'Brien, administratrix, 489 Minot Ave., Chula Vista, Calif. 91910

Filed Dec. 5, 1996, Appl. No. 760,700

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct variety of miniature rose plant, named 'Kay Denise', hardy, dwarf, vigorous growth, well-branched and attractive in appearance, substantially as illustrated and described; characterized by its hybrid tea form blooms, ranging from near Chinese Coral to near Coral Pink with occasionally deeper tones near Mandarin Red in warmer weather, and having a paler reverse in all weather, which are abundant on the bush and usually borne one to a stems but occasionally in sprays of 3 to 5 or more.

10,947

HIBISCUS PLANT NAMED 'CALYPSO WIND'

Wendy R. Bergman, Lehigh Acres, Fla., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 22, 1997, Appl. No. 995,357

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—257 **1 Claim**

1. A new and distinct Hibiscus plant named 'Calypso Wind', as illustrated and described.

10,948

HYBRID TEA ROSE PLANT NAMED 'MEINALPIR'

Alain A. Meilland, Antibes, France, assignor to CP (Delaware), Inc., Wilmington, Del.

Filed Dec. 4, 1997, Appl. No. 985,235

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—131 **1 Claim**

I. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms attractive blossoms that are smoked red on the inner surface and cream with tones of silver on the outer surface,

(b) exhibits an erect growth habit,

(c) forms decorative broad foliage that is dark green and semi-glossy,

(d) exhibits good disease resistance with respect to Downey Mildew and Botrytis, and

(e) is particularly well suited for the production of cut flowers under greenhouse growing conditions;

substantially as herein shown and described.

10,949

HYBRID TEA ROSE PLANT NAMED 'PANRAV'

A. A. Pouw, De Kwakel, Netherlands, assignor to Panorama Roses N.V., Curacao, Netherlands

Filed Dec. 2, 1997, Appl. No. 982,492

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—139 **1 Claim**

1. A new and distinct rose plant of the variety substantially as shown and described.

10,950

BOUGAINVILLEA PLANT NAMED 'RPBOUG 327'

Magdalena J. M. van Rijn, Schipluiden, Netherlands, assignor to Rijnplant, Schipluiden, Netherlands

Filed Oct. 29, 1997, Appl. No. 959,904
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—256 1 Claim

1. A new and distinct cultivar of Bougainvillea plant named 'Rpboug 327', as illustrated and described.

10,951

ORIENTAL HYBRID LILY PLANT NAMED 'EUROBLANCA'

Johan A. Mak, 5595 Halls Ferry Rd., Independence, Oreg. 97351

Filed Sep. 4, 1997, Appl. No. 929,006
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive cultivar of Oriental hybrid lily plant substantially as herein shown and described, characterized by its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season; the flowers of the new plant being particularly characterized by their pure white color, the lightly ruffled margins, their large size and good substance, their upright to semi-upright orientation, and the sharply ascending pedicels of the upper flowers; the plant being particularly characterized by dark green leaves and an unusually broad leaf (7–9 centimeters in width) under the lowest flower of the stem.

10,952

CLEMATIS PLANT NAMED 'KUGOTIA'

H. J. M. Kuijf, Mennonjetenbuut 116A, 1427 B.C. Ulthoom, Netherlands

Filed Jun. 20, 1997, Appl. No. 879,956
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—228 1 Claim

1. A new and distinct Clematis plant of the variety substantially as shown and described.

10,953

PETUNIA PLANT NAMED 'DANPETBRI'

Gabriel Danziger, Nir Zvi, Israel, assignor to Danziger — "Dan" Flower Farm, Post Beit Dagan, Israel

Filed May 30, 1997, Appl. No. 865,891
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—68.1 1 Claim

1. A new and distinct cultivar of petunia plant named 'Danpetbri' as herein shown and described.

10,954

VARIETY OF GERANIUM PLANT NAMED 'EVKA'

Jaroslav Janecek, Vrbové, Slovakia, assignor to Elsner pac Jungpflanzen, Germany

Filed Jun. 17, 1997, Appl. No. 877,275
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—87.12 1 Claim

1. A new and distinct variety of Ivy Geranium plant as shown herein and characterized by its uniform green and white foliage, its minimal leaf cupping, its improved cutting production, rooting speed and propagation survival rate and its cascading appearance and coloration.

10,955

LILY PLANT NAMED 'BLUE EYES'

Petrus Mattheus Maria Hoff, Steenbergen, Netherlands, assignor to Hoffgaarde B.V., Netherlands

Filed Jun. 4, 1997, Appl. No. 869,156
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinct variety of lily plant substantially as shown and described.

PATENTS

GRANTED JUNE 8, 1999

GENERAL AND MECHANICAL

5,909,705

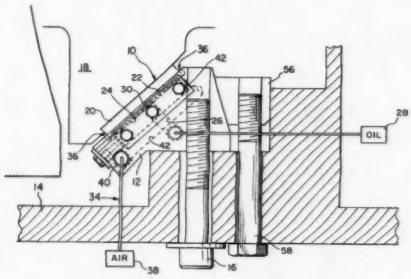
VACUUM SEAL FOR SLIDE GUIDING

Michael L. Short, Wapakoneta; John B. Bornhorst, New Bremen; Eward A. Daniel, Ft. Loramie, and Dale A. Homan, Maria Stein, all of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Provisional application No. 60/021,301, Jul. 8, 1996. This application Jul. 2, 1997, Appl. No. 886,931.

Int. Cl.[6] B30B *15/04*

U.S. Cl. 100—214 **6 Claims**



1. A press comprising:

a frame;

a slide mounted within said frame for reciprocation relative thereto;

a drive unit for reciprocating said slide;

a gib mount attached to said frame opposite said slide, said mount including an oil film region and a vacuum region;

a source of pressurized oil applying pressurized oil to said oil film region between said gib mount and said slide whereby an *oil film is created between said gib mount and said slide; and*

a source of vacuum pressure applying vacuum pressure to said vacuum region whereby oil leaking from said oil film region is captured by said vacuum region.

5,909,706

SUPPORT TABLE FOR SUPPORTING A MODULE BOARD AND SCREEN PRINTING METHOD USING THE SAME

Jong Man Jin; Sung Ho Moon, and Jong Jin Park, all of Asan, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 5, 1998, Appl. No. 19,123

Claims priority, application Rep. of Korea, Apr. 8, 1997, 97-12796

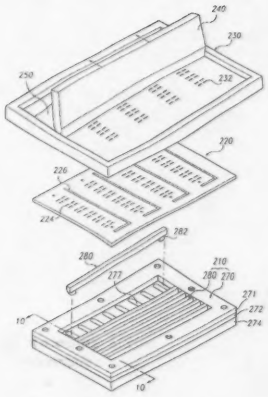
Int. Cl.[6] B05C *17/06*

U.S. Cl. 101—126 **23 Claims**

1. A support table for supporting a board used in the manufacture of a semiconductor module, said support table comprising:

a body having an upper surface, a lower surface, a rectangular groove defined in said upper surface, a middle portion located between said upper and lower surfaces, and a plurality of spaced apart slots extending through said middle portion and open to said rectangular groove defined in the upper surface; and

a plurality of jigs which are inserted in said slots, the jigs having upper surfaces exposed adjacent said groove in the upper surface of said body so as to be capable of supporting semiconductor devices mounted to a board resting on said upper surface.



5,909,707

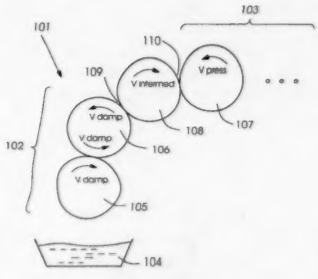
HIGH-SPEED PRINTING SYSTEM HAVING MULTIPLE SLIPPING NIPS

Daniel Paul Gagne, S. Berwick, Me., and Charles Douglas Lyman, Farmington, N.H., assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jul. 24, 1997, Appl. No. 899,614

Int. Cl.[6] B41F *7/26;31/10;31/13*

U.S. Cl. 101—148 **10 Claims**



1. An offset printing apparatus comprising:

a dampening system, including a pan roll and a slip roll, wherein the pan roll is in rolling contact with the slip roll;

a dampening system drive device, the dampening system drive device driving both the pan roll and the slip roll at the same surface velocity;

a press system including a press roll;

a press system drive device, the press system drive device driving the press roll at a surface velocity;

a first intermediate roll disposed between the dampening system and the press system, the first intermediate roll being in slipping contact with the slip roll and the press roll;

a gearing mechanism connected to the first intermediate roll, the gearing mechanism having a gear ratio, the gear ratio rotating the first intermediate roll at a surface velocity greater than the surface velocity of the pan roll and the slip roll and less than the surface velocity of the press roll.

5,909,708

SHEET-FED OFFSET ROTARY PRINTING MACHINE

Hans-Bernhard Bolza-Schünemann, Würzburg, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany

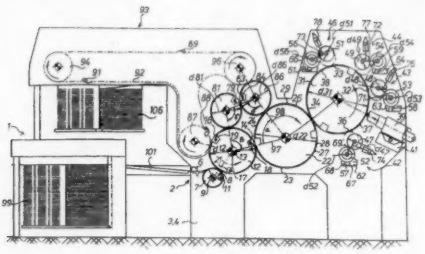
PCT No. PCT/DE96/01278, § 371 Date Jan. 20, 1998, § 102(e) Date Jan. 20, 1998, PCT Pub. No. WO97/03831, PCT Pub. Date Feb. 6, 1997

PCT Filed Jul. 15, 1996, Appl. No. 983,131

Claims priority, application Germany, Jul. 18, 1995, 195 26 115; Oct. 17, 1995, 195 38 546

Int. Cl.[6] B41F *7/14*

U.S. Cl. 101—177 **11 Claims**



1. A sheet-fed offset rotary printing press for multi-color printing comprising:

a printing cylinder having a first diameter and a number of printing areas;

a rubber blanket cylinder engaging said printing cylinder and having said first diameter and said number of printing areas, said first diameter being a multiple of a nominal diameter;

a first, central impression cylinder engaging said rubber blanket cylinder;

a number of controlled gripper systems on said first, central impression cylinder, said number of controlled gripper systems being not equal to said number of printing areas on said printing cylinder; and

a second impression cylinder, said second impression cylinder having at least one controllable gripper system, said second impression cylinder being in engagement with said rubber blanket cylinder, said first and second impression cylinders being arranged to selectively act with said rubber blanket cylinders.

5,909,709

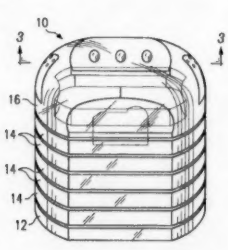
STACKABLE STAMPS

Suk Ku An, Gyunggido, Rep. of Korea; Norman D. Siegfried, Crystal Lake, Ill., and Brian L. Adkinson, Stettin, Wis., assignors to Fiskars Inc., Madison, Wis.

Filed Aug. 14, 1997, Appl. No. 911,333

Int. Cl.[6] B41K *1/56*

U.S. Cl. 101—405 **4 Claims**



1. A stackable stamp assembly used to form images on a surface, the assembly being substantially congruent and comprising:

a plurality of intermediate members, each intermediate member having a top edge and an oppositely facing bottom edge;

a cover having a top oppositely facing a bottom having a bottom edge, an uppermost member of the plurality of intermediate members disposed closest to the cover and releasable engaging the cover;

each intermediate member of the plurality of intermediate members having a stamp attached to its bottom; and

substantially aligned apertures formed through the cover and the intermediate members for aligning the stamp assembly relative to the surface.

5,909,710

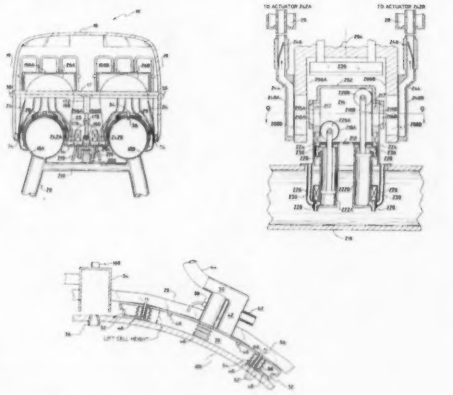
AIR-LEVITATED TRAIN

Richard D. Cummins, 33 Harmony Cir., Orchard Park, N.Y. 14127-4836

Filed Aug. 15, 1997, Appl. No. 912,245

Int. Cl.[6] B60V *1/00*

U.S. Cl. 104—23.2 **22 Claims**



13. A vehicle system comprising:

a guideway including a pair of parallel guideway tubes, at least one of said guideway tubes containing pressurized air and having a plurality of levitation valves spaced along the length thereof for selectively discharging air from said guideway tube;

a carriage adapted for travel along said guideway, said carriage including a first plurality of lift cells arranged circumferentially about a portion of one of said pair of guideway tubes and opening toward an outer surface of said one guideway tube, a second plurality of lift cells arranged circumferentially about a portion of another of said pair of guideway tubes and opening toward an outer surface of said another guideway tube, a collector duct arranged to receive air from said plurality of levitation valves, and supply duct means for transporting air from said collector duct to said first and second pluralities of lift cells to support said carriage above said guideway tubes on a cushion of air;

active skirt means defining the peripheral sides of each of said first and second pluralities of lift cells, said skirt means being adjustable in height to accommodate changes in lift cell height, and said skirt means having a bottom edge biased to remain in close proximity to said outer surface of said guideway tube associated therewith;

a passenger car connected to said carriage for travel therewith; and

cell pressure control means for increasing and decreasing air pressure within said lift cells to support said carriage and said passenger car in response to varying load distributions of said carriage and said passenger car and surface variations in said guideway.

5,909,711

BOGIE FOR A RAILWAY VEHICLE WITH ADJUSTABLE WHEEL SETS AND RAILWAY VEHICLE WITH SUCH A BOGIE

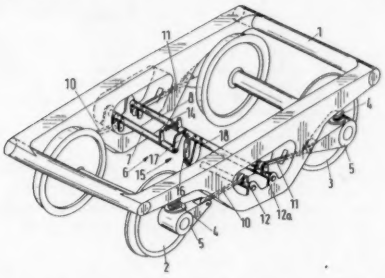
Hans Heiner Vogel, Tuttwil, and Hans-Rudolf Kägi, Hermatswil, both of Switzerland, assignors to SLM Schweizerische Lokomotiv - Und Maschinenfabrik AG, Winterthur, Switzerland

Filed Aug. 22, 1996, Appl. No. 701,443

Claims priority, application European Pat. Off., Aug. 23, 1995, 95810527

Int. Cl.[6] B61D *1/00*

U.S. Cl. 105—168 **16 Claims**



1. A bogie for a railway vehicle, the bogie comprising:

a. a bogie frame;

b. at least two wheel sets on which the bogie frame is supported, each wheel set being positionable substantially radially to a respective track curve to be followed, each wheel set comprising axle housings guided movably at least in the longitudinal direction of the bogie; and

c. a coupling device via which the wheel sets are coupled to one another such that they are steerable in opposite senses, the coupling device including an adjustment device for the transmission of adjustment forces to the coupling device, the adjustment device and the coupling device being coupled to one another via a support connection by which the coupling device is adjustably held according to the respective positioning of the wheel sets in opposite senses, and via which, in a case of the transmission of the respective adjustment force, a corresponding additional steering movement is transferable to each of the wheels sets in the same sense but is superimposed on their positioning in opposite senses.

5,909,712

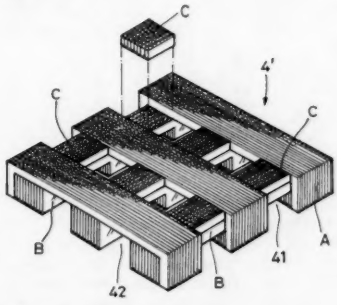
STRUCTURE OF PAPER PALLET

Ya-Te Tan, No. 9, Sublane 1, Lane 434, Hu Shan St., Kuei Shan Hsiang, Taoyuan Hsien, Taiwan

Filed Jul. 7, 1998, Appl. No. 110,481

Int. Cl.[6] B65D *19/00*

U.S. Cl. 108—51.3 **2 Claims**



1. A paper pallet, comprising:

a plurality of E-shaped lower structural bodies being laterally spaced in a row, adjacent pairs of said lower structural bodies being spaced one from the other by a first dimension, said first dimension being sufficient to receive a fork truck's fork between said adjacent pairs of said lower structural bodies, each of said lower structural bodies having a longitudinally extended portion disposed horizontally and three transversely directed portions extending vertically downward to a base surface, each of said three transversely directed portions being spaced from an adjacent other transversely directed portion by a second dimension, said second dimension being sufficient to receive a fork truck's fork between said transversely directed portions, each of said lower structural bodies being formed by a plurality of stacked E-shaped blanks adhesively joined together to form a predetermined thickness for said lower structural body;

a plurality of U-shaped upper structural bodies spaced longitudinally by said second dimension and respectively adhered to said plurality of E-shaped lower structural bodies, each of said U-shaped upper structural bodies extending laterally across said plurality of E-shaped lower structural bodies in alignment with a respective one of said transversely directed portions of each of said plurality of E-shaped lower structural bodies and extending a predetermined height thereabove, each of said U-shaped upper structural bodies being formed by a plurality of stacked U-shaped blanks adhesively joined together to form a predetermined thickness for said upper structural body; and,

a plurality of reinforcing bodies adhered between respective pairs of said U-shaped upper structural bodies, each of said plurality of reinforcing bodies being disposed in overlaying relationship with a section of said longitudinally extended portion of a respective one of said plurality of E-shaped lower structural bodies, each of said plurality of reinforcing bodies being formed by a plurality of stacked rectangular blanks adhesively joined together and having a height dimension equivalent to said predetermined height of said upper structural bodies to form a planar surface therewith.

5,909,713

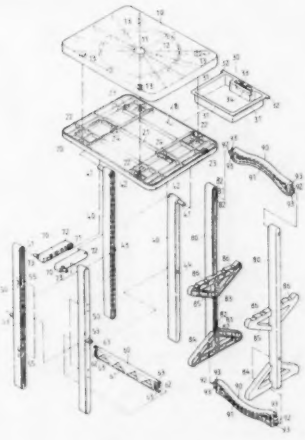
FOLDABLE TABLE DEVICE

Ching-Tzong Liaw, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jun. 22, 1998, Appl. No. 96,391

Int. Cl.[6] A47B *3/02*

U.S. Cl. 108—119 **4 Claims**



1. A foldable table device comprises:

an upper plate, a lower plate coupling with the upper plate, a drawer disposed on a bottom of the lower plate, a first link bar

connected to the lower plate, a second link bar connected to the lower plate, a first leg plate connected to the first link bar, a second leg plate connected to the second link bar, a third leg plate connected to the lower plate, and a fourth leg plate connected to the lower plate,

the upper plate having a center hole, a plurality of radiating ribs disposed on a bottom of the upper plate, and a plurality of lower posts disposed on the bottom of the upper plate,

the lower plate having a slot, a plurality of reinforced ribs, four hollow seats matching the lower posts, two generally U-shaped plates disposed on a bottom of the lower plate, and two linear plates disposed on the bottom of the lower plate,

each said generally U-shaped plate having a rail bar, a shaft, and a pin,

each said shaft having a needle,

each said lower post inserted in the respective hollow seat,

each of the first and the second leg plates having an end blind hole, a middle pivot having a step hole, and two snap grooves,

each said snap groove having two inner recesses,

two snap fasteners disposed in the end blind hole,

each of the first and the second link bars having a round hole, a step flange, and a hollow axle,

the hollow axle inserted in the respective end blind hole,

each said shaft inserted in the respective round hole,

the step flange engaging with the respective needle,

each of the third and the fourth leg plates having an end pillar, an end flange, and a middle recess hole,

two clip fasteners disposed in the middle recess hole,

the end flange engaging with the respective pin,

each said end pillar and each said end flange disposed between the respective linear plate and the respective U-shaped plates,

the middle pivot inserted in the respective middle recess hole, and

the clip fasteners engaging with the step hole.

5,909,714

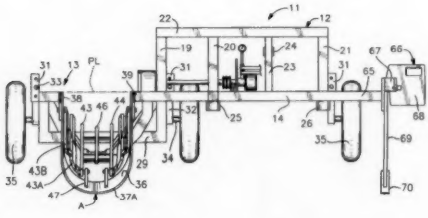
TREE DIGGING APPARATUS

Glen Stoner, 11982 W. Green Hill Rd., McMinnville, Tenn. 37110

Filed Dec. 16, 1997, Appl. No. 991,576

Int. Cl.[6] A01G *23/02*

U.S. Cl. 111—101 **10 Claims**



1. A tree digging device for use in continuously removing a row of trees from the ground comprising; a main support frame, and a blade support frame, a fixed U-shaped blade secured between said main and blade support frames and extending there beyond so as to be engageable into and through the ground under the row of trees, a separation basket extending from said blade, a pair of ground engaging cutting disks on said respective main and blade support frames in spaced aligned relation to said blade, means for oscillating said separation basket independently from said blade and said frames, means for adjustably positioning said support frames in spaced vertical relation to the ground, means on said main support frame for removably securing said main support frame to a self-powered pulling vehicle.

5,909,715

METHOD OF CONVERSION OF A VESSEL FROM SINGLE TO DOUBLE HULL

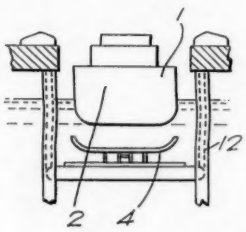
Prabhakaran Alek Menon, No. 23, Jalan Pucung 7, Taman Perling, 81200 Johor Bahru, Malaysia

Filed Oct. 30, 1996, Appl. No. 739,896

Claims priority, application Malaysia, Oct. 30, 1995, PI 950 3264

Int. Cl.[6] B63B *25/08*

U.S. Cl. 114—65 R **2 Claims**



1. A method of assembly or repair of a vessel using a ship-lift system, the vessel having an existing first hull, the method comprising the steps of:

(a) lowering a section of a second hull shell on a lifting device and positioning the vessel above the lifting device;

(b) raising the lifting device to bring the section of second hull shell into a position adjacent the first hull of the vessel;

(c) attaching the section of second hull shell to the first hull; and

(d) lifting the combined vessel and section of second hull to a site for attachment of remaining sections of the second hull to the vessel.

5,909,716

APPARATUS FOR AND A METHOD OF MILKING ANIMALS

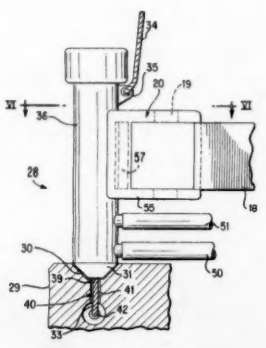
Cornelis van der Lely, 7 Brüschenrain, CH-6300 Zug, Switzerland

Filed Apr. 24, 1996, Appl. No. 636,985

Claims priority, application Netherlands, Sep. 7, 1994, 9401451

Int. Cl.[6] A01J *3/00*

U.S. Cl. 119—14.08 **24 Claims**



1. An apparatus for milking animals, such as cows, comprising at least one milking robot including teat cups, each of which has an upper aspect and a lower aspect, and at least one milking parlor, each teat cup being provided with at least one corresponding cable which depends generally vertically from a corresponding fastening member that is mounted adjacent an animal being milked in said milking parlor and which is connected to said upper aspect of said

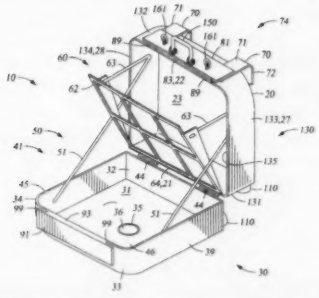
corresponding teat cup, a teat cup holder for holding each said teat cup when it is not received by the animal's teat, horizontally extending flexible transport means connected to the lower aspect of each said teat cup for independently moving each said teat cup from the animal's teat to said teat cup holder, each said cable retaining said corresponding teat cup in approximately an upright position during the movement of said corresponding teat cup to said teat cup holder.

5,909,717

PORTABLE COLLAPSIBLE LIVESTOCK FEEDER

Jimmie K. Randall, P.O. Box 398, Richards, Tex. 77873

Filed Oct. 28, 1997, Appl. No. 959,251
Int. Cl.[6] A01K *1/10*
U.S. Cl. 119—58 **20 Claims**



1. A portable and collapsible livestock feeder of grains and fibrous feed, comprising:

a rear panel having opposing first and second edges and an inner face;

a lower container having a first side and a top surface;

a means for pivotally attaching said lower container top surface of said lower container first side to said rear panel first edge, thereby defining a closed position when said lower container and said rear panel are pivoted so that said lower container top surface abuts said rear panel inner face, and thereby defining an open position when said lower container and said rear panel are pivoted so that said lower container is angularly related to said rear panel;

at least one L-shaped bracket being rotatably mounted to said rear panel adjacent said second edge, thereby defining a first position when each of said at least one L-shaped bracket is rotated to be proximate said lower container, and thereby defining a second position when each of said at least one L-shaped bracket is rotated to be distal said lower container; and

each of said at least one L-shaped bracket sized and constructed so that when said feeder is in said closed position said bracket freely rotates and does not impact said rear panel or said lower container when said bracket is moved to and from said first and second positions.

5,909,718

PARTICULATE ABSORBENT MATERIAL FROM WASTE PAPER

Richard W. Sheehan, Johnson City, Tenn., assignor to Absorbent Paper Company, Inc., Johnson City, Tenn.

Filed Jun. 3, 1997, Appl. No. 867,848
Int. Cl.[6] A01K *29/00;1/015*
U.S. Cl. 119—172 **6 Claims**

1. A method for the preparation of a particulate absorbent material from waste paper comprising the steps of:

(a) subjecting waste paper to a size reduction treatment for a sufficient time to break down said waste paper to small particles,

(b) mixing the broken down waste paper with from about 200 to about 800 weight percent of water to bind some fibers of said waste paper into particles by mechanical entanglement;

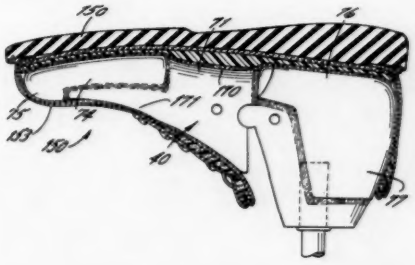
(c) drying the particles of waste paper to a final water content of about 1 to about 10 weight percent, based on the total weight of the composition to produce a particulate absorbent material having a density of from about 0.02 to about 0.4 g/cc.

5,909,719

SHOE LAST AND METHOD OF CONSTRUCTING A SHOE

James L. Throneburg, 625 W. Bell St., Statesville, N.C. 28687; James G. McLelland, Statesville, N.C.; Victor J. Gallenstein, Maysville, Ky.; Leon E. Kelley, Needham, Mass., and Douglas H. Richie, Long Beach, Calif., assignors to James L. Throneburg, Statesville, N.C.

Division of application No. 08/672,585, Jun. 28, 1996, which is a continuation-in-part of application No. 29/035,482, Feb. 28, 1995, Pat. No. 0,374,553. This application Dec. 3, 1997, Appl. No. 984,350.
Int. Cl.[6] A43D *9/00;11/00;3/00*
U.S. Cl. 12—142 R **7 Claims**



1. A method of constructing a shoe which is particularly constructed to be worn with and matingly interface with a wearer's custom-shaped sock comprising the steps of:

forming a sole having a ball portion, a heel portion, and a raised arch portion, each of the sole portions being arranged to receive respective overlying portions of wearer's custom-shaped sock and to abuttingly contact the same, the raised arch portion of the sole being arranged to have a greater upward extent toward an overlying wearer's custom-shaped sock than either the ball portion or the major areas of the heel portion of the sole, the lengthwise extent of each portion of the sole corresponding substantially to the lengthwise extent of the respective lower overlying portion of the custom-shaped sock when positioned on the foot of the wearer, the raised arch portion corresponding to relatively thinner fabric arch portion of the custom-shaped sock than thickener fabric portions in the heel and ball portions;

providing a shoe last comprising:

a body having a backpart and a forepart connected to said back part and extending forwardly therefrom, each of said forepart and said backpart having a last upper portion and a last bottom portion , said last bottom portion defined by lower end peripheries of the forepart and the backpart for abuttingly contacting and interfacing with the sole of a shoe, the last bottom portion including a last bottom featherline for defining a bottom shape of the shoe last, the bottom shape of the shoe last corresponding to the bottom shape of a custom-shaped sock when positioned on a foot of a wearer;

positioning the heel portion, ball portion and raised arch portion of the sole so as to abuttingly contact and matingly interface with the respective heel portion, ball portion and arch portion of the last bottom portion corresponding to the shape of a custom-shaped sock having respective heel portion, ball portions and arch portions.

5,909,720

DRIVING SYSTEM WITH ENGINE STARTING CONTROL

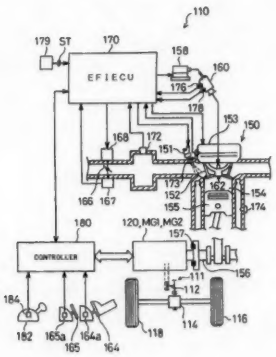
Masaaki Yamaoka; Tetsuya Abe, both of Toyota; Hideaki Matsui, and Yutaka Taga, both of Aich-ken, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 21, 1997, Appl. No. 845,170

Claims priority, application Japan, Jul. 18, 1996, 8-209231; Mar. 4, 1997, 9-067336

Int. Cl.[6] **F02D** *13/02;* **B60K** *6/00;* **B60L** *11/00*

U.S. Cl. 123—179.3 **18 Claims**



1. A driving system comprising:

an internal combustion engine connecting with an output shaft via a damper;

a motor having a rotating shaft mechanically connected to said output shaft;

compression ratio varying means for varying an effective compression ratio of said internal combustion engine;

driving state detecting means for detecting a driving state of said internal combustion engine;

motor control means for driving and controlling said motor in response to a predetermined driving requirement, in order to motor said internal combustion engine while a fuel supply to said internal combustion engine is stopped; and

compression ratio regulation means for, when the driving state of said internal combustion engine detected by said driving state detecting means in the process of motoring by said motor control means is within a predetermined range, regulating said compression ratio varying means to make the effective compression ratio of said internal combustion engine lower in the driving state within said predetermined range than that in the driving state out of said predetermined range.

5,909,721

CYLINDER BLOCK WITH STEPLESS PLATING COATING AND METHOD FOR FORMING STEPLESS PLATING COATING

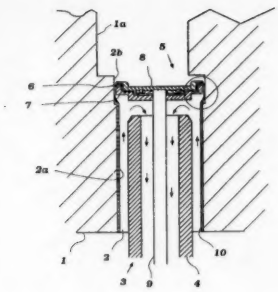
Hirohiko Ikegaya, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of application No. 08/621,256, Mar. 25, 1996. This application Sep. 12, 1997, Appl. No. 928,254.

Claims priority, application Japan, Mar. 23, 1995, 7-64364

Int. Cl.[6] **F02F** *5/00*

U.S. Cl. 123—193.2 **5 Claims**



1. A method for forming a plating-coating-on-a-wall of a cylinder bore of a cylinder block, said cylinder bore being formed by a cylinder wall continuously comprised of a piston-sliding surface and at an end of said cylinder bore, a recessed surface, said method comprising the steps of: sealing the end of said cylinder bore the side of said recessed surface at a sealing position disposed on said recessed surface or a wall outwardly continuing from said recessed surface; introducing plating solution inside said cylinder bore defined by said sealing position; and plating at least said piston-sliding surface.

5,909,722

METHOD AND DEVICE FOR CONTROLLING A FINAL CONTROLLING ELEMENT IN CLOSED-LOOP

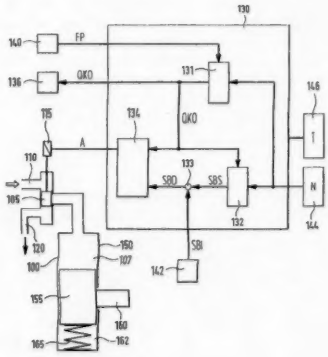
Kai-Lars Barbehoen, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 20, 1998, Appl. No. 26,731

Claims priority, application Germany, Feb. 21, 1997, 197 06 821

Int. Cl.[6] **F02D** *31/00*

U.S. Cl. 123—357 **10 Claims**



1. A method for controlling in closed-loop a final controlling element having integral action as a function of a system deviation, comprising the steps of:

providing a driving signal to be fed to the final controlling element using an automatic controller; and

influencing the driving signal as a function of a precontrol value such that a position of the final controlling element is maintained when the system deviation is approximately equal to zero.

5,909,723

APPARATUS AND A METHOD FOR CONTROLLING THE IGNITION TIMING OF A CYLINDER-INJECTION INTERNAL COMBUSTION ENGINE

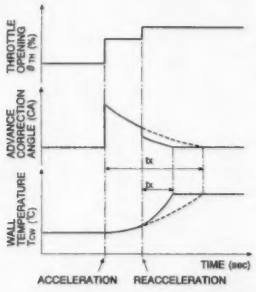
Kazuhiro Ichimoto, Nagoya; Osamu Nakayama, Toyota; Mitsuru Kishimoto; Kazumasa Iida, both of Kyoto; Hiroki Tamura, Okazaki; Katsuhiko Miyamoto, Funai-gun, and Hiromitsu Ando, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/799,219, Feb. 14, 1997, abandoned. This application Nov. 10, 1997, Appl. No. 966,705.

Claims priority, application Japan, Feb. 16, 1996, 8-029492; Jul. 23, 1996, 8-193672

Int. Cl.[6] F02P *5/15*

U.S. Cl. 123—406 **33 Claims**



1. An ignition timing control apparatus for a cylinder-injection internal combustion engine, said engine including a combustion chamber into which fuel is injected directly, and an ignition device for igniting said injected fuel, said ignition timing control apparatus comprising:

discriminating means for judging whether acceleration of a vehicle, in which said engine is installed, is being requested and discriminating an operation state of the engine;

determining means for determining an ignition timing for the ignition device in accordance with at least a load on the engine and an engine speed;

detecting means for detecting a wall temperature variable corresponding to one of a wall temperature of the combustion chamber and a parameter related to the wall temperature; and

correcting means for correcting the determined ignition timing on an advance side in accordance with the wall temperature variable, for a given period of time immediately after said discriminating means judges that acceleration of said vehicle is being requested.

5,909,724

ENGINE CONTROL METHOD

***Hirofumi Nishimura; Tomomi Watanabe, both of Hiroshima;* Junichi Taga, Higashi-Hiroshima, and Michihiro Imada, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan**

Filed Mar. 25, 1997, Appl. No. 826,806

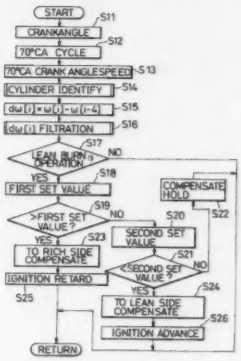
Claims priority, application Japan, Mar. 29, 1996, 8-078000

Int. Cl.[6] F02M *51/00;* **F82D** *41/14*

U.S. Cl. 123—436 **16 Claims**

1. An engine combustion condition judging method for detecting a crank angle speed of a multiple cylinder engine to judge a combustion condition of each of cylinders of the engine based on the detection of the crank angle speed, wherein the improvement comprises steps of;

setting a predetermined crank angle range selectively determined within a range between a crank angle at which a combustion substantially terminates in a given cylinder and another crank angle at which a combustion substantially starts in the next cylinder to the given cylinder in an engine cycle



for detecting a crank angle speed property, and judging the combustion condition based on said crank angle speed property within said predetermined crank angle range.

5,909,725

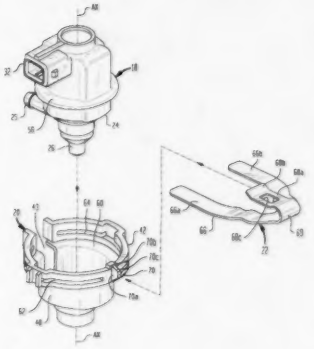
AUTOMOTIVE EMISSION CONTROL VALVE RETAINING CLIP AND MOUNTING METHOD

David W. Balsdon, and Murray F. Busato, both of Chatham, Canada, assignors to Siemens Canada Limited, Chatham, Canada

Provisional application No. 60/058,674, Sep. 12, 1997. This application Mar. 19, 1998, Appl. No. 44,524.

Int. Cl.[6] F02M *37/04;* **F02B** *47/08*

U.S. Cl. 123—516 **20 Claims**



1. A method of mounting an emission control device on a component of an internal combustion engine powered automotive vehicle, the method comprising:

providing an emission control device for controlling the passage of a fluid associated with operation of an internal combustion engine through the device, the device comprising a body having an imaginary axis and a flange that extends radially and circumferentially on the body;

providing a component of an automotive vehicle with a mounting for the device, the mounting comprising a catch and a receptacle defining a receptacle space within which at least a portion of the body of the device is to be disposed;

providing a retaining clip for engaging the mounting to retain the device in the mounting, the clip comprising a capturing formation for coacting with the receptacle to axially capture the body of the device in the receptacle space and a locking formation for releasably locking the clip with the catch;

providing the receptacle with a circumferentially extending wall having a slot that extends radially through the wall and circumferentially about the axis;

disposing at least a portion of the body of the device in the receptacle space;

associating the retaining clip with the mounting by passing the capturing formation into, through, and out of the slot, thence across the receptacle space in overlapping relation to the flange, and thence into the slot; and

releasably locking the clip to the catch to prevent disengagement of the clip from the mounting, and attendant removal of the capturing formation out of capturing relation with the body of the device, unless the locking formation is released from locking with the catch.

5,909,726

FUEL CONTROL SYSTEM FOR AUTOMOBILE ENGINE

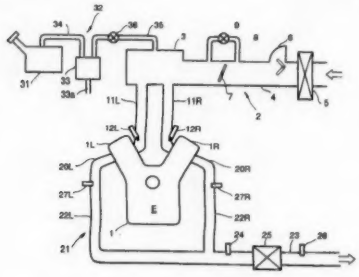
Hideki Kobayashi, Hiroshima, and Hideki Kusunoki, Ehime, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 19, 1997, Appl. No. 879,026

Claims priority, application Japan, Jun. 20, 1996, 8-160023; Feb. 6, 1997, 9-149600

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—520 **23 Claims**



1. A fuel control system for an automobile engine for executing air-to-fuel ratio feedback control to feedback control the amount of fuel delivered to the engine based on an air-to-fuel ratio feedback control value so as to deliver a target air-to-fuel ratio, the air-to-fuel ratio feedback control value being decreased according to an air-to-fuel ratio deviation of an actual air-to-fuel ratio from the target air-to-fuel ratio when the actual air-to-fuel ratio is on a rich side and increased according to the air-to-fuel ratio deviation when the actual air-to-fuel ratio is on a lean side, the fuel control system comprising:

determination means for taking an absolute air-to-fuel ratio feedback control value smaller than an absolute value of said air-to-fuel ratio feedback control value at a point in close proximity to a reversal of an air-to-fuel ratio feedback control value between a downward tendency and a upward tendency for an attributive value relative to a ratio of fuel to air in an air intake system; and

fuel control value determination means for determining a fuel control value for controlling the amount of fuel delivered to the engine based on said attributive value.

5,909,727

EVAPORATED FUEL TREATMENT DEVICE OF AN ENGINE

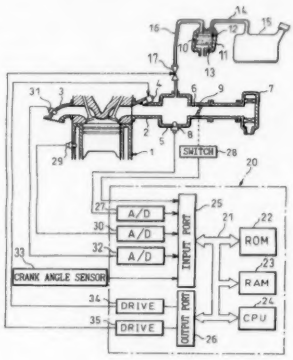
Norihisa Nakagawa, Numazu, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Jun. 3, 1998, Appl. No. 89,735

Claims priority, application Japan, Jun. 4, 1997, 9-146392

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—520 **14 Claims**



1. An evaporated fuel treatment device for an engine provided with an intake passage, comprising:

a canister containing activated carbon for temporarily storing evaporated fuel;

a purge control valve for controlling an amount of purge of fuel vapor to be purged from the canister into the intake passage, the concentration of the fuel vapor which is purged being divided into a first fuel vapor concentration which changes proportionally to a purge rate of the fuel vapor and a second fuel vapor concentration which changes without regard as to the purge rate of the fuel vapor;

air-fuel ratio detecting means for detecting the air-fuel ratio;

feedback control means for feedback control of the air-fuel ratio so that the air-fuel ratio becomes a target air-fuel ratio;

fuel vapor concentration reducing means for reducing the first fuel vapor concentration per unit purge rate to follow a reduction in the amount of fuel absorbed in the canister when the fuel vapor is being purged;

fuel vapor concentration calculating means for calculating the second fuel vapor concentration from the amount of deviation of the air-fuel ratio from the target air-fuel ratio caused when reducing the first fuel vapor concentration per unit purge rate by the fuel vapor concentration reducing means; and

correcting means for correcting an amount of fuel supplied based on the first fuel vapor concentration and the second fuel vapor concentration.

5,909,728

AIR ASSIST DEVICE OF AN ENGINE

Mamoru Yoshioka, and Yasuhiro Ooi, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Aug. 26, 1997, Appl. No. 918,376

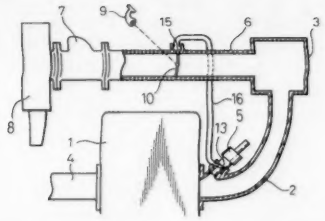
Claims priority, application Japan, Aug. 29, 1996, 8-228398

Int. Cl.[6] F02B *23/00*

U.S. Cl. 123—585 **13 Claims**

1. An air assist device of an engine having an intake passage and a fuel injector arranged in the intake passage, said device comprising:

an assist air passage for feeding assist air to fuel injected from the fuel injector;



a throttle valve arranged in the intake passage upstream of the fuel injector and inclined with respect to a transverse plane of the intake passage when the throttle valve is positioned at an idling position; and

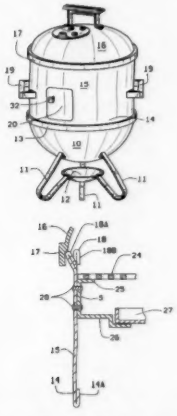
at least one slit shaped air intake port connected to said assist air passage and formed on an inner wall of the intake passage so as to extend in the circumferential direction of said inner wall, an opening of said slit shaped air intake port being at least partially covered by an outer peripheral end face of the throttle valve when the throttle valve is positioned at an idling position, a downstream side edge portion of the opening of said slit shaped air intake port being formed into an arc shape which extends along a downstream side edge portion of the outer peripheral end face of the throttle valve when the throttle valve is positioned at an idling position, an amount of assist air fed into said assist air passage being controlled by said throttle valve.

5,909,729

SMOKER ADAPTER FOR BARBECUE GRILLS

Frank L. Nowicke, Jr., 19358 Ossenfort Ct., Glencoe, Mo. 63038

Filed May 15, 1997, Appl. No. 856,737
Int. Cl.[6] A47J *37/00*
U.S. Cl. 126—25 R **1 Claim**



1. A food smoker adapter for a barbecue grill fitted between a base and a cover, said adapter comprising:

a) a cylindrical sleeve forming the adapter and shaped from a flat sheet to present a bottom open end for engaging the base, a top open end presented to receive the cover, said flat sheet having side edges extending vertically between said open bottom and top ends of the resulting cylindrical sleeve, and said bottom and top ends being formed with folded edges;

b) a plurality of separate support means carried by said cylindrical sleeve and spaced around the internal surface thereof, each of said support means including a first support spaced from said top end and a second support spaced from said first support;

c) a food supporting grill to be received on said first support, and a water pan to be received on said second support; and

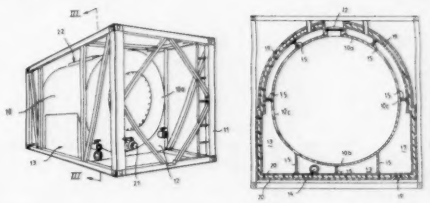
d) a plurality of tab elements formed in said top end folded edges and projecting outwardly from said cylindrical sleeve to present a support for the cover placed directly on said cylindrical sleeve tabs.

5,909,730

BITUMEN CONTAINER

Peter Lehmann, Wadeville, South Africa, and Jacques Grisoni, *La Croix-sur-Lutry, Switzerland, assignors to Henred-Fruehauf Trailers (Proprietary) Limited, South Africa, and* Cont-Asphalt Limited, Seychelles, Switzerland

Filed Mar. 21, 1997, Appl. No. 822,429
Int. Cl.[6] F24H *9/00*
U.S. Cl. 126—343.5 A **6 Claims**



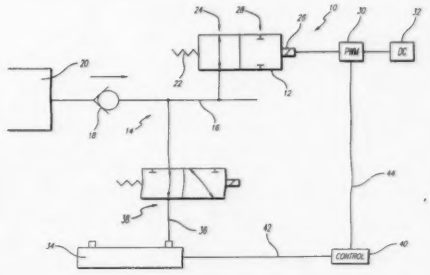
1. A heatable container for bitumen compositions, comprising a tank defining a base zone, side wall zones, end wall zones and a roof zone, a heating box defining an encapsulating structure within which the base zone, side wall zones, and roof zone of the tank is housed, spaced from the tank; an inlet to the heating box and outlet from the heating box for a heating medium; a plurality of longitudinal partitions arranged in the heating box, to define a labyrinth of longitudinal to and fro flues for a heating medium introduced at the inlet to the heating box and discharged through the outlet, the heating box housing a greater volume at the base zone of the tank, than at the roof zone of the tank to provide a larger volume for heating medium at such base zone of the tank.

5,909,731

LUNG VENTILATOR SAFETY CIRCUIT

John J. O'Mahony, Galway, Ireland, and Floyd R. Farnham, III, Encinitas, Calif., assignors to Puritan-Bennett Corporation, Overland Park, Kans.

Continuation of application No. 08/304,047, Sep. 12, 1994. This application Dec. 6, 1996, Appl. No. 761,392.
This patent is subject to a terminal disclaimer
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—205.24 **5 Claims**



1. A lung ventilator safety valve apparatus for relieving pressure in a patient airway of a ventilator system, comprising:

a solenoid valve connected to a patient airway of a ventilator system, said solenoid valve having an open position venting pressure from said patient airway when no power is applied to the valve and a closed position with a predetermined closing force when power is applied to the valve, said solenoid valve being biased to the open position, and said solenoid valve operating in the closed position to open when the pressure in the patient airway is equal to or greater than said predetermined closing force;

a programmable valve controller connected to said solenoid valve for controlling operation of said solenoid valve, said valve controller including means for setting the maximum airway pressure threshold said valve controller causing said solenoid valve to open when the pressure in said patient airway is equal to or greater than a predetermined maximum airway pressure threshold.

5,909,732

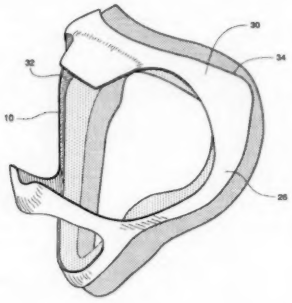
INSERT TO PROVIDE CONFORMAL SUPPORT FOR THE REFLECTIVE SEAL OF AN OXYGEN MASK

Donald A. Diesel, Floresville; Curtis D. White, and Daniel M. Magaw, both of San Antonio, all of Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 4, 1998, Appl. No. 72,055

Int. Cl.[6] **A62B** *18/08*

U.S. Cl. 128—206.24 **4 Claims**



1. A removable mask insert for providing conformal support for a reflective seal of an oxygen mask to limit deformation of a reflective seal when a reflective seal is engaged with a user's face, said insert being securely mounted into the cavity of an oxygen mask, said insert comprising:

(a) a thin formed shell having an outer side adapted to be placed in conforming engagement with the interior surface of an oxygen mask, an opposite inner side adapted to confront a user's face, and a marginal facial edge adapted to be maintained in spaced relation to a user's face; and

(b) a formed rim made of resiliently deformable material attached to said marginal edge, wherein said shell is rigid relative to said rim and functions as a supporting framework to said rim to hold said rim in place in conforming engagement with an inner surface of a reflective seal such that said rim presses an outer face-engaging surface of a reflective seal against a user's face to conform to the contours of a user's face to form an airtight seal therewith.

5,909,733

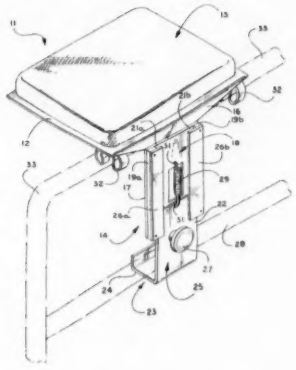
MECHANISM FOR SECURING A PATIENT'S LIMB

Keith Ehrich, 111 Mays Rd., Milledgeville, Ga. 31061

Filed Jul. 23, 1998, Appl. No. 121,150

Int. Cl.[6] **A61B** *19/00*

U.S. Cl. 128—869 **8 Claims**



1. A limb restraining mechanism for use in combination with a patient transporter, wherein the transporter has upper and lower support members, the restraining mechanism comprising:

a restraint plate and a limb pad assembly and an adjustable clamp assembly adapted to be affixed to the upper and lower support members of the patient transporter;

the restraint plate having a top planar surface to which the limb pad is affixed, and the restraint plate further having a proximal edge surface from which depends the adjustable clamp assembly;

the restraint plate having a bottom planar surface to which at least one clamp is attached;

the adjustable clamp assembly comprising an upper slide plate assembly and a lower slide plate assembly, the upper slide plate assembly being a thin elongated plate having a proximal end and a distal end wherein the proximal end is attached to and depends from the proximal edge surface of the restraint plate, the lower slide plate assembly being a thin elongated plate having a proximal end and a distal end wherein the proximal end is juxtaposed to the upper slide plate assembly in a sliding relationship; and

the lower slide plate assembly having its distal end terminating in a clamp assembly.

5,909,734

ADMINISTRATION OF PRODUCTS OF THE 5-LIPOXYGENASE METABOLIC PATHWAY TO ENHANCE ANTIMICROBIAL DEFENSE

Marc Peters-Golden, and Theodore Standiford, both of Ann Arbor, Mich., assignors to Regents of the University of Michigan, Ann Arbor, Mich.

Filed Dec. 3, 1996, Appl. No. 757,136

Int. Cl.[6] **A61B** *19/00;* **A61K** *7/04*

U.S. Cl. 128—898 **14 Claims**

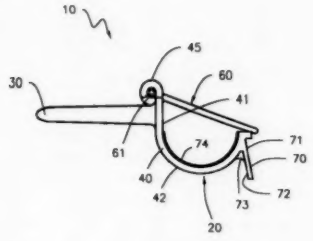
1. A method of enhancing antimicrobial defense, comprising administering an effective amount of a therapeutic composition to a host suspected of having a microbial infection, said composition comprising a cysteinyl leukotriene.

5,909,735

SMOKING ARTICLE HOLDER

Peter Carl Knudsen, 16 E. 134th St., Kansas City, Mo. 64145

Filed May 20, 1997, Appl. No. 859,615
Int. Cl.[6] A24F *9/14*
U.S. Cl. 131—257 7 Claims



1. A smoking article holder for retaining a smoking article comprising:

(a) a generally oblong member having a concave upper surface, a concave lower surface, a rear edge and a front edge, the rear edge of said generally oblong member being slightly higher than the front edge of said generally oblong member;

(b) a means for retaining a smoking article against said generally oblong member; and

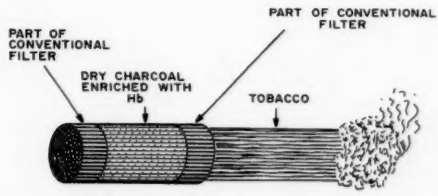
(c) a pin extending from the lower surface of said generally oblong member below the rear edge of said generally oblong member such that said pin is in a generally parallel plane with the top of the front edge of said generally oblong member.

5,909,736

REMOVAL OF NOXIOUS OXIDANTS AND CARCINOGENIC VOLATILE NITROSOCOMPOUNDS FROM CIGARETTE SMOKE USING BIOLOGICAL SUBSTANCES

Ioannis Stavridis, 15 Chremonidou Street, Athens, Greece, GR-166 33, and George Deliconstantinos, 40-44 Ilidos Street, Athens, Greece, GR-115 27

PCT No. PCT/GR94/00015, § 371 Date May 24, 1996, § 102(e) Date May 24, 1996, PCT Pub. No. WO96/00019, PCT Pub. Date Jan. 4, 1996
PCT Filed Jun. 27, 1994, Appl. No. 602,821
Int. Cl.[6] A24B *15/00*
U.S. Cl. 131—331 25 Claims



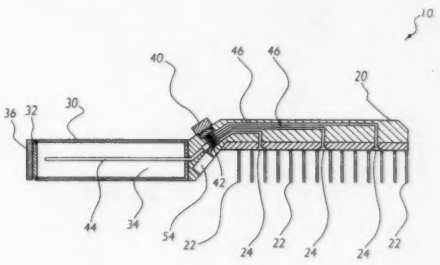
1. A filter for filtering tobacco smoke comprising a fiber matrix enriched with a biological substance selected from the group consisting of hemoglobin, lysates of erythrocytes, and combinations thereof.

5,909,737

COMBINATION BRUSH AND HAIRSPRAY SYSTEM

Johnny Ricco, 401 W. 56th St., Apt. 4K, New York, N.Y. 10019

Provisional application No. 60/064,646, Nov. 10, 1997. This application May 29, 1998, Appl. No. 87,040.
Int. Cl.[6] A45D *24/22*
U.S. Cl. 132—116 8 Claims



1. A combination brush and hairspray system, comprising:

a handle;

a head attached to the handle, wherein said head includes a lower surface;

a plurality of bristles attached to said lower surface;

a chamber within said handle for containing a fluid;

a plurality of nozzles within said lower surface fluidly connected to said chamber by at least one tube;

a pump means positioned within said tube for drawing said fluid from said chamber and emitting said fluid through said plurality of nozzles;

said plurality of bristles are aligned in a plurality of rows; and

said plurality of nozzles are positioned between said plurality of rows to allow complete distribution of said fluid without interference of said plurality of bristles.

5,909,738

METHOD FOR SEALING A HOUSING AND CORRESPONDING HOUSING

Bernard Quennessen, Whippani, N.J., assignor to Qualipac, Neuilly Sur Seine, France

PCT No. PCT/FR97/00156, § 371 Date Aug. 6, 1997, § 102(e) Date Aug. 6, 1997, PCT Pub. No. WO97/27777, PCT Pub. Date Aug. 7, 1997
PCT Filed Jan. 27, 1997, Appl. No. 875,878
Claims priority, application France, Jan. 30, 1996, 96 01086
Int. Cl.[6] A45D *33/00*
U.S. Cl. 132—293 17 Claims

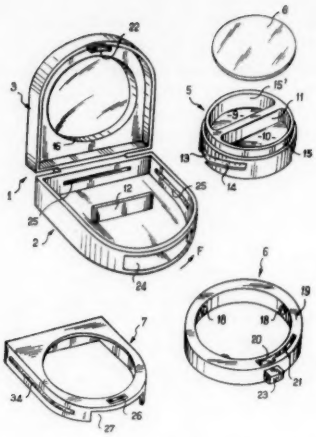
1. A case comprising:

a base;

a lid which is movable toward and away from said base and which can be locked onto the base;

a container which is received on the base and which contains a product;

a bottom of said lid having a size and shape corresponding to a top of said container and positioned so that when said lid is locked the top of said container can contact said bottom of said lid when said container is raised relative to said base and said lid;



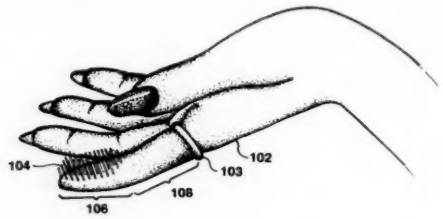
positively actuable raising means for raising and lowering the container relative to the base and the lid.

5,909,739

DISPOSABLE TOOTHBRUSH WITH TOOTHPASTE

Morad Masrour-Rad, 4044 Old Tapanga Cyn Rd., Calabasas, Calif. 91302

Filed Jun. 20, 1997, Appl. No. 880,030
Int. Cl.[6] A45D *44/18*
U.S. Cl. 132—308 **20 Claims**



1. A toothbrush comprising:

an elastic tube having a closed end and an open end;

a first side of said closed end supporting a plurality of clusters of bristles;

said closed end being made of material of a first elasticity and said open end being made of material of a second elasticity, said second elasticity being greater than said first elasticity;

said open end permitting a finger to be inserted into said elastic tube, whereby a tooth can be brushed using said plurality of clusters of bristles.

5,909,740

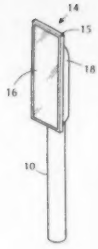
PROTECTIVE CAP AND MIRROR UNIT FOR COSMETIC PENCIL

Morris Sussman, 50 Doxsee Dr., Freeport, N.Y. 11520

Filed Aug. 20, 1998, Appl. No. 137,284
Int. Cl.[6] A45D *40/24*
U.S. Cl. 132—318 **5 Claims**

1. A protective cap and mirror unit for a cosmetic pencil provided at one end with a sharpened tip for drawing cosmetic lines to define the eyes or lips of a user of the pencil, said unit comprising:

A. a rectangular frame molded of synthetic plastic material having a front face and a rear face;



B. a molded tubular plastic cap integral with the rear face of the frame having an entry adjacent one end of the frame to receive and protect the tip end of the cosmetic pencil; and

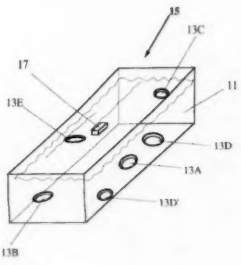
C. and a mirror mounted on the front face of the frame, said unit having a storage mode in which the tip end of the pencil is snugly telescoped in the cap and shielded thereby, and in active mode in which the unit is held in one hand of the user as she observes her face at close range in the mirror while holding the pencil in her other hand to draw said lines.

5,909,741

CHEMICAL BATH APPARATUS

Gary W. Ferrell, 608 Terrace Ave., Half Moon Bay, Calif. 94019

Filed Jun. 20, 1997, Appl. No. 879,576
Int. Cl.[6] B08B *3/12*
U.S. Cl. 134—1 **10 Claims**



1. A method of introducing controlled vibrations into a liquid, the method comprising the steps of:

providing a liquid container, containing a selected liquid and having at least three container walls, with each of a first container wall and a second container wall being a sheet having at least two exposed and opposing faces, having a selected thickness, and being made of a selected material drawn from the group consisting of polyetheretherketone, poly-amide-imide and polyphenylene sulfide; and

introducing vibrations at a first selected frequency into the selected liquid through the first container wall;

introducing second vibrations at a second selected frequency into the liquid at the second container wall in a time interval that overlaps a time interval during which the first vibrations are introduced, where the second selected frequency differs from the first selected frequency and the second container wall is oriented relative to the first container wall so that the second vibrations are oriented at a selected angle that is substantially greater than zero, relative to the orientation of the first vibrations.

5,909,742
METAL CLEANING METHOD

Jiangbo Ouyang, Bensalem; Philip D. Deck, Ardsley, and William L. Harpel, Langhorne, all of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

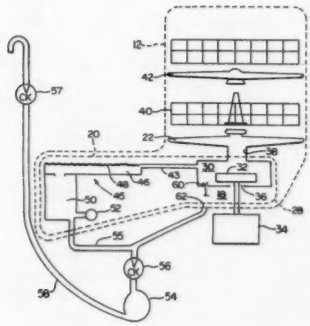
Filed Mar. 26, 1993, Appl. No. 38,588
Int. Cl.[6] C09K *13/04;* **C23G** *1/02*
U.S. Cl. 134—3 **4 Claims**

1. A method for preparing metal surfaces for the application of paint and siccative coatings thereto comprising adding an effective amount to said metal surfaces of an aqueous solution of citric acid, a hydroxycarboxylic acid salt, a nonionic surfactant having an HLB of about 3 to about 8 and sodium xylene sulfonate.

5,909,743
AUTOMATIC PURGE FILTRATION SYSTEM FOR A DISHWASHER

Edward L. Thies, Niles; Roger J. Bertsch, Stevensville, and Wilbur W. Jarvis, St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 10, 1997, Appl. No. 927,706
Int. Cl.[6] A47L *15/46*
U.S. Cl. 134—10 **28 Claims**



1. A dishwasher having an interior wash chamber receiving wash liquid and a sump region disposed at the bottom of the wash chamber, the dishwasher comprising:

a wash pump having an intake through which wash liquid is drawn from the sump, the wash pump further having a main outlet and a sample outlet;

a soil collector receiving wash liquid from the wash pump through the sample outlet, the soil collector having a screen for passing filtered wash liquid back into the sump region such that soils accumulate within the soil collector;

a pressure sensor for sensing fluid pressure within the soil collector; and

a drain pump fluidly connected to the soil collector,

wherein the drain pump operates to drain wash liquid from the soil collector in response to the pressure sensor sensing a pressure exceeding a predetermined limit pressure.

23. A method of processing water and soil entrained in the recirculating water within a dishwasher having a sump, the method comprising the following steps:

passing water and soil through an impeller;

passing at least a portion of the water and soil through a soil collector having a filter screen such that water is filtered through the filter screen and soils are retained in the soil collector;

sensing the pressure within the soil collector;

purging the soil collector such that collected soils and water are pumped out of the soil accumulator to drain in response to the pressure within the soil collector exceeding a predetermined limit pressure at least until the pressure within the soil collector falls below the predetermined limit pressure.

5,909,744
DIBASIC ESTER STRIPPING COMPOSITION

Javad J. Sahbari, San Jose, Calif., assignor to Silicon Valley Chemlabs, Inc., Sunnyvale, Calif.

Continuation-in-part of application No. 08/593,628, Jan. 30, 1996, Pat. No. 5,741,368. This application Apr. 20, 1998, Appl. No. 63,627.
Int. Cl.[6] B08B *7/00;3/04*
U.S. Cl. 134—38 **24 Claims**

1. A method for removing photoresist from a substrate comprising contacting said substrate with a stripping solution for a time sufficient to remove said photoresist from said substrate, said stripping solution consisting essentially of:

(a) from about 5% to about 95% by weight of one or more dibasic esters having the general formula:

$$R_1CO_2—(CH_2)_n—CO_2R_2$$

where R_1 and R_2 are alkyl groups of 1–4 carbons and n=1–5;

(b) from about 1% to about 65% by weight of tetrahydrofurfuryl alcohol or a water soluble alcohol, glycol, glycol ether, or mixture thereof, the water soluble alcohol, glycol, glycol ether having the general formula:

$$R—(CHOH)_n—R'$$

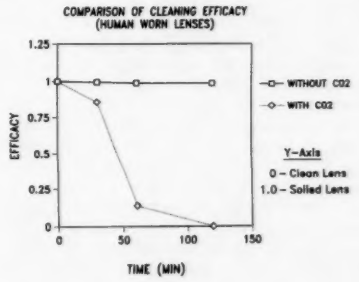
where R and R' are selected from the group consisting of a hydrogen atom, an alkyl group of 1 to 7 carbon atoms, and or an alkoxyl group of 1 to 4 carbon atoms, n=1–3; and

(c) from about 5% to about 60% by weight deionized water.

5,909,745
USE OF CARBON DIOXIDE AND CARBONIC ACID TO CLEAN CONTACT LENSES

Yusuf Ali, Stow, Ohio; Rajkumar Bhatia, and Alok K. Kulshreshtha, both of Arlington, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of application No. 08/806,571, Feb. 25, 1997, abandoned, Provisional application No. 60/012,274, Feb. 26, 1996. This application Jun. 18, 1998, Appl. No. 99,669.
Int. Cl.[6] C11D *3/10*
U.S. Cl. 134—42 **13 Claims**



1. A method of cleaning a soiled contact lens comprising contacting the soiled lens with a composition having a pH of less than about 7.5 comprising a cleansing amount of carbon dioxide and carbonic acid for a time sufficient to clean the soiled lens, wherein

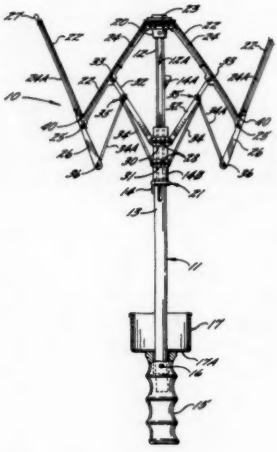
the composition excludes polymeric beads, an enzyme, a cleansing amount of a surfactant, and a disinfecting amount of hydrogen peroxide.

5,909,746

REVERSIBLE UMBRELLA

Thomas R. Doster, and Karel J. Doster, both of P.O. Box 2136, Matthews, N.C. 28106

Filed Nov. 12, 1997, Appl. No. 967,922
Int. Cl.[6] A45B *19/00*
U.S. Cl. 135—25.1 **8 Claims**



1. A reversible umbrella comprising:

a shaft with an upper end and a lower end;

a tubular connector on the upper end of the shaft;

a transfer sleeve mounted on the shaft for reciprocatory movement along the shaft;

a plurality of ribs extending radially from and connected to the tubular connector;

a spanner hingedly connected to the end of each rib distal from the tubular connector;

an auxiliary rib extending outwardly from and connected to each spanner;

a flexible cover overlying the ribs and connected to auxiliary ribs;

means connecting the cover to outer ends of the auxiliary ribs;

a plurality of guides extending radially from and connected to the transfer sleeve and opposite ends of each guide being pivotally connected to the transfer sleeve and to the mid portion of one of the ribs;

a plurality of stabilizers extending radially from and connected to the transfer sleeve and opposite ends of each stabilizer being pivotally connected to the transfer sleeve and to the mid portion of one of the guides;

an auxiliary stabilizer pivotally connecting each guide to one of the spanners;

said guides, stabilizers, auxiliary stabilizers and spanners being responsive to movement of the transfer sleeve toward the upper end of the shaft to extend the ribs and auxiliary ribs outwardly and extend the cover to an open position; and

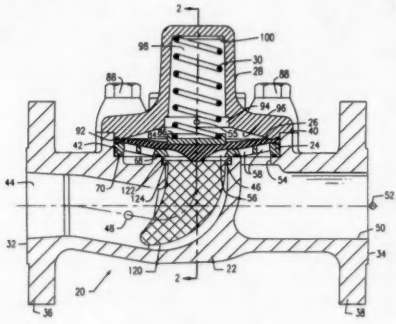
said guides, stabilizers, auxiliary stabilizers and spanners being responsive to movement of the transfer sleeve toward the lower end of the shaft to lower the ribs and elevate the auxiliary ribs while folding a portion of the cover inside out.

5,909,747

RADIAL FLOW DIAPHRAGM VALVE

Richard H. Schieber, Erie, Pa., assignor to American Meter Company, Horsham, Pa.

Filed Apr. 3, 1998, Appl. No. 54,978
Int. Cl.[6] F16K *31/12*
U.S. Cl. 137—492 **5 Claims**



1. A valve for regulating the flow of fluid therethrough, comprising:

a valve body having an inlet end, an outlet end, a top wall between said inlet and outlet ends, a valve chamber in said valve body open to said top wall, an inlet passage extending through said valve body and open to said inlet end and said valve chamber with the opening of said inlet passage to said valve chamber being circular, and an outlet passage extending through said valve body and open to said valve chamber and said outlet end, wherein said outlet passage is annular and concentric with the opening of said inlet passage to said valve chamber to at least partially surround said inlet passage where said inlet and outlet passages open to said valve chamber, the opening of said inlet passage to said valve body inlet end and the opening of said outlet passage to said valve body outlet *end sharing a first centerline which is orthogonal to a second* centerline which is defined by the concentric openings of the inlet and outlet passages to the valve chamber;

a generally disc-like valve cage member disposed in said valve chamber and overlying the openings of said inlet and outlet passages to said valve chamber, said valve cage member having a central opening in registration with the opening of said inlet passage to said valve chamber and a plurality of peripheral openings surrounding said central opening and in registration with the opening of said outlet passage to said valve chamber, a portion of the upper surface of said valve cage member opposite the openings of said inlet and outlet passages to said valve chamber being generally concave and tapering upwardly from a planar region surrounding said central opening and past said plurality of peripheral openings;

a flexible diaphragm within said valve chamber and overlying said valve cage member so as to cover said central opening and said plurality of peripheral openings, said diaphragm including a spring cup on the side of said diaphragm opposite said valve cage member, said spring cup having a flat surface adjacent said diaphragm and parallel to said valve cage member planar region, said spring cup flat surface being larger than said valve cage member central opening so that said spring cup provides support to said diaphragm across said valve cage member central opening and onto said valve cage member planar region for sealing contact thereon, said diaphragm in its unstressed state having a lower surface which is complemental to the portion of the upper surface of said valve cage member in the region of said valve cage member extending from the periphery of said central opening past said plurality of peripheral openings;

a valve top member mounted to said valve body top wall over said valve chamber, said valve top member engaging the periphery of said diaphragm to capture and sealingly engage the diaphragm periphery between the valve top member and

the valve cage member, the valve top member being formed with an internal control chamber overlying the valve chamber, said control chamber of said valve top member including a surface opposite said upper surface portion of said valve cage member which is substantially the inverse of said upper surface portion of said valve cage member;

a spring disposed in the control chamber of the valve top member, the spring engaging the valve top member and the diaphragm spring cup to yieldably bias the diaphragm into sealing contact with the valve cage member and prevent fluid flow from the inlet passage to the outlet passage through the central opening and the plurality of peripheral openings of the valve cage member; and

a channel through said valve top member providing fluid communication to said control chamber;

wherein said valve chamber, said valve cage member and said diaphragm are all circular in section orthogonal to said second centerline;

whereby said diaphragm moves symmetrically without elongation or rolling from a zero flow configuration in contact with said upper surface portion of said valve cage member to a full flow configuration in contact with said control chamber surface, said diaphragm being compressively loaded in flow configurations between said zero flow and full flow configurations.

5,909,748

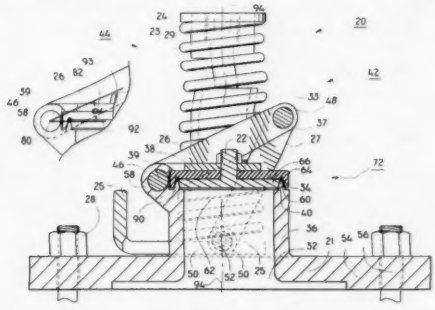
PRESSURE RELIEF VALVE

Barry LaCroix, 866 Main Street East, Hamilton, ON, Canada, L8M 1L9

Filed May 26, 1998, Appl. No. 84,185

Int. Cl.[6] F16K *15/00*

U.S. Cl. 137—527 **18 Claims**



1. A pressure relief valve comprising:

(a) a valve body including a valve seat;

(b) a flap valve pivotally mounted on said valve body, said flap valve sealingly co-operating with said valve seat in a closed position sealing off said pressure relief valve, said flap valve pivoting about a pivot axis between said closed position and a fully open position;

(c) a biasing means operably connected to said flap valve for applying a biasing force as said valve pivots from said closed position to said fully open position; and

(d) a linkage means for communicating biasing force from said biasing means to said valve such that the linkage means continuously urges said valve to said closed position, said linkage means communicating a preselected component of said total biasing force onto said valve as a closing force, wherein the linkage means is adapted to enable the valve closing force to be preselected according to the position of the flap valve, such that the valve closing force as a function of the valve position can be pre selectively controlled,

wherein said linkage means comprises:

(e) a pivot arm having a valve end and a pivot end, said valve end rigidly and integrally connected to said flap valve and extending longitudinally from said pivot axis, wherein said pivot arm pivots above said pivot axis in unison with said valve, and wherein said pivot arm is longitudinally disposed at a preselected angle alpha from a valve plane; and,

(f) a link arm having a pivot end and a spring end, said link arm and pivot arm pivotally connected together at said pivot end of each arm, and said link arm pivotally connected to said biasing means at said spring end, wherein said spring end of said link aim is urged linearly along a spring axis by said biasing means, and said link arm pivotally connected to said pivot arm communicates and converts said linear movement of said end of said link arm into a pivoting movement of said pivot arm about said pivot axis, wherein only a preselected component of the total bias force is communicated as a valve closing force to said flap valve.

5,909,749

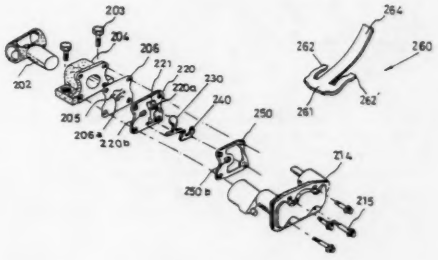
VALVE APPARATUS OF HERMETIC TYPE COMPRESSOR

Un Seop Lee; Jae Seog Oh; Kyoung Sig Tark, all of Kyungsangnam-Do; Won Sik Oh, Seoul; Hyeong Seok Kim, Kyungki-Do, and Sang Min Lee, Kyungsangnam-Do, all of Rep. of Korea, assignors to LG Electronics, Inc., Rep. of Korea

Division of application No. 08/619,405, Mar. 21, 1996. This application Mar. 10, 1997, Appl. No. 814,087.

Int. Cl.[6] F16K *15/16*

U.S. Cl. 137—857 **1 Claim**



1. A valve apparatus of a hermetically sealed compressor comprising:

a cylinder head provided with a reentrant groove having an exhaust hole for ejecting a compressed refrigerant from an interior of a cylinder, a fixing groove part including a leg seating portion and a fixing-pin setting portion and a seating portion, respectively;

a single exhaust valve installed at an upper surface of said exhaust hole, the exhaust hole being openable and closeable by said exhaust valve, said exhaust valve having legs at one end thereof which extend in opposing directions and having another end which selectively engages the upper surface of said exhaust hole, said legs of said exhaust valve being seated on said leg seating portion of said reentrant groove and said another end of said exhaust valve being placed on the upper surface of said exhaust hole of said reentrant groove;

a one-piece fixing pin having a fixing-pin body and fixing arms extending from opposite ends of said fixing-pin body, said fixing arms of said fixing pin being fixed by being inserted in sidewalls of said fixing-pin setting portion of said reentrant groove, free ends of said fixing arms engaging said fixing pin setting portion and said fixing-pin body engaging with and pressing on said legs of said exhaust valve to fix said exhaust valve in place;

a head cover;

a packing engaging said cylinder head and head cover and interposed therebetween for preventing leakage of said refrigerant gas, said packing covers a portion of said fixing pin;

an arch elastic-bent portion protruding from a center portion of each fixing arm of said fixing pin, said arch portions engaging said cylinder head; and

a valve spring integrally formed with said fixing pin, the valve spring extending from an upper center portion of said fixing-pin body between said fixing arms and having an upward inclination extending in the same direction as said fixing arms.

5,909,750

MULTIPLE STAGE DEVICE AND METHOD FOR MANUFACTURING A WOVEN FABRIC

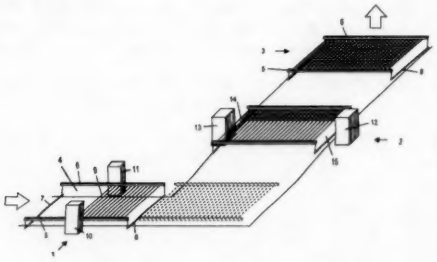
Falk-Hayo Sanders, Aussichtsstr. 6, CH-8704 Herrliberg, Switzerland

Filed Jul. 7, 1997, Appl. No. 888,564

Claims priority, application Germany, Jun. 12, 1997, 197 24 893

Int. Cl.[6] D03D *41/00*; D03J *1/02*

U.S. Cl. 139—11 **12 Claims**



1. Method for manufacturing a woven fabric (**42**,**48**) having a limited length comprising the following steps:

laying a layer of warp threads (**9**) by means of laying mechanisms (**10**,**11**) on at least one warp frame (**4**,**15**) having a size which is determinative of the limited length of the fabric and holding said warp threads (**9**) on said warp frame in a warp thread station (**1**),

moving said warp frame (**4**,**15**) to a weft insertion mechanism (**12**,**13**) having a shed forming device,

laying weft threads (**14**) by means of said weft insertion mechanism (**12**,**13**) into said warp threads while operating said shed forming device in a weft thread station (**2**),

transporting said warp frame (**4**,**15**) having a completed fabric (**42**,**48**) thereon to a fabric removal station (**3**), removing said completed fabric (**42**,**48**) from said warp frame, and

transferring said warp frame (**4**,**15**) back to the warp thread station (**1**).

5,909,751

AUTOMATIC CABLE TIE INSTALLATION TOOL

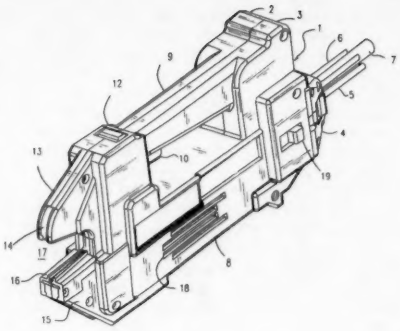
Vladimiro Teagno, Turin, Italy, assignor to Thomas & Betts International, Inc., Sparks, Nev.

Filed Oct. 27, 1997, Appl. No. 958,237

Claims priority, application Italy, Oct. 31, 1996, RM96A0746

Int. Cl.[6] B21F *9/02*

U.S. Cl. 140—123.6 **23 Claims**



1. An automatic cable tie installation tool, comprising:

a frame with a handle with manual trigger means;

a movable jaw for grasping a bundle of cables or the like to be tied with a tie strap;

means interconnecting said trigger means and said jaw, for moving the jaw in engagement with said bundle of cables;

first means that can be actuated at the end of said engagement operation for retracting said jaw to define a substantially closed path for a cable tie;

means for shooting an elongate cable tie having a random orientation along a longitudinal axis towards said closed path, associated with means for braking and correctly orienting said cable tie strap before entering of the same into said closed path;

second means for pushing said cable tie along said closed path and for engaging the tail of the cable tie strap into an apertured head of the cable ties strap;

third means for grasping the tail of the cable tie strap after the passage thereof through said apertured head so that the cable tie is tightened around the bundle of cables or the like;

means cooperating with said third means, to sense when a desired tightening of the cable tie strap has been reached, and to actuate said second means to drive cutting means for severing the excess of said tail of said cable tie strap protruding from the exit side of said apertured head; and

means for returning said first means to its rest condition in order to open and release said jaw and to reposition said second means in its rest position, ready for a new operation.

5,909,752

CONTAINER FOR THE SEALING OF TIRES WITH PUNCTURES

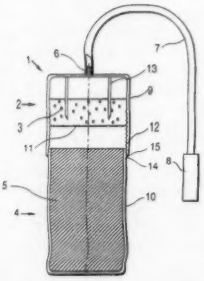
Manfred Gerresheim, Obertshausen-Hausen; Hans-Bernd Fuchs, Alzenau-Horstein, and Ulrich Steinbrecht, Ober-Ramstadt, all of Germany, assignors to SP Reifenwerke GmbH, Hanau, Germany

Filed Sep. 5, 1997, Appl. No. 923,994

Claims priority, application Germany, Sep. 26, 1996, 196 39 707

Int. Cl.[6] B65B *31/00*

U.S. Cl. 141—38 **11 Claims**



1. *A device for sealing a tire that has been punctured, which* comprises:

a first chamber for containing a first material;

a second chamber for containing a second material the walls of at least the first or second chamber being compressible, and

said first and second chambers being arranged co-axially end to end, and separated by a rupturable member;

means for rupturing said rupturable member; and

outlet means connected to either of said first or second chamber whereby upon the rupturing of said member the whole contents of said chambers are mixed together and subsequently discharged through said outlet means.

5,909,753

DISPENSER FOR A TWO-PART COMPOSITION

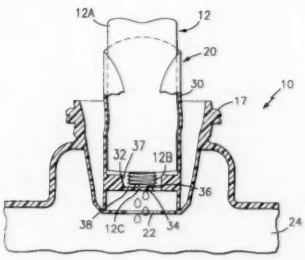
Louis P. Rossi, Union, and W. Lance H. Hemsarth, Ringwood, both of N.J., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of application No. 08/700,809, Aug. 21, 1996, Pat. No. 5,735,320. This application Nov. 5, 1997, Appl. No. 964,636.

This patent is subject to a terminal disclaimer

Int. Cl.[6] B65D *81/00*

U.S. Cl. 141—330 **13 Claims**



1. A dispenser for separately storing and facilitating the mixture of separate components of a two-part composition, said dispenser including:

a first container having a chamber for retaining one of said components, said first container has a lower bottom portion and a neck upper portion defining a discharge opening with a penetrable seal covering said opening;

a second container having a chamber for retaining the other of said components and for mixing said components together to form said composition and a neck portion defining a second container opening communicating with its chamber;

a receptacle sleeve mounted on said second container and adapted to surround and house the first container within the neck portion of the second container, said receptacle sleeve includes a base having at least one aperture passing therethrough;

said base has an upper housing portion for supporting the first container in an upright position during transportation and storage and a lower recessed portion for receiving the neck portion of the first container upon inversion;

said recessed portion includes an upwardly extending piercing element positioned adjacent to said at least one aperture; and,

wherein said first container is adapted to be secured within said receptacle sleeve with said lower bottom portion in contact with said upper housing portion of the base during periods of storage and transportation; and,

upon removal and inversion of its orientation, is further adapted *to be reinserted into said lower recessed portion of the base of* the receptacle sleeve so that upon suitable pressure the piercing element penetrates the penetrable seal of the first container to dispense the contents of the first container into said chamber of the second container to permit mixture of the components while protecting the user from direct contact with the unmixed components.

5,909,754

SHOWER UNIT

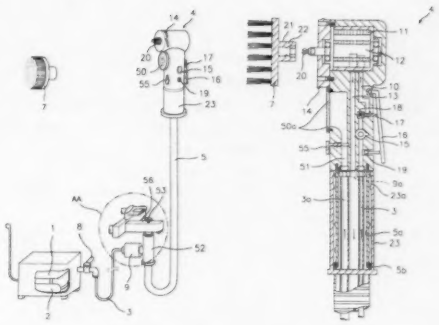
Il-Mook Oh, Kyunggi-Do, Rep. of Korea, assignor to Kwang-Woo, Seoul, Rep. of Korea, a part interest

Filed Jun. 19, 1997, Appl. No. 878,658

Claims priority, application Rep. of Korea, Jun. 20, 1996, 96-16563; Sep. 30, 1996, 96-31830; Dec. 5, 1996, 96-68738; Dec. 30, 1996, 96-63368

Int. Cl.[6] A46B *13/04*

U.S. Cl. 15—29 **11 Claims**



1. A shower unit comprising:

a generating means for producing high-pressure air for use with *the water supply*;

a rotating means driven by the high-pressure air;

a silencer positioned at an air exit of the rotating means to reduce air noise,

an injecting means positioned near the rotating means to inject tap water; and

a cleaning means driven directly by the rotating means.

5,909,755

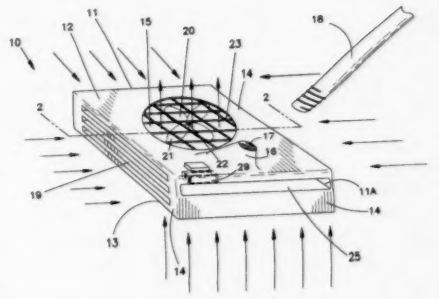
VACUUM DUST MOP

Margo Gene Leal, 2170 Bello Ave., San Jose, Calif. 95125

Filed Sep. 29, 1997, Appl. No. 939,297

Int. Cl.[6] A47L *5/24*

U.S. Cl. 15—325 **3 Claims**



1. A vacuum cleaning device comprising:

a housing having a top, a bottom, four sides, and an interior, the bottom and four sides having suction slots, the top having *exhaust slots and an appenditure with internal threads for* accepting a broom handle;

a turbine comprising blades attached to a shaft which are supported *in the housing for rotation* to create a vacuum whereby dust is drawn into the vacuum slots;

a filter mechanism for trapping dust entering the housing through the suction slots, the filter mechanism positioned

below the turbine and above the suction slots and fitting within an internal ridge on the interior of the housing;

a cloth dust cover extending over the housing, the cover having a plurality of holes on each surface to allow dust to enter the covered suction slots and exhaust to leave the exhaust slots;

a power mechanism to energize the turbine.

5,909,756

PNEUMATIC TIRE INCLUDING SUB-GROOVES

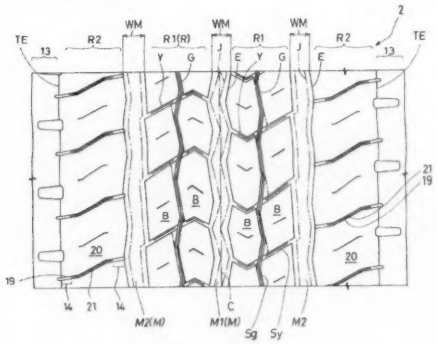
Tatsuya Miyazaki, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Sep. 16, 1997, Appl. No. 931,755

Claims priority, application Japan, Sep. 16, 1996, 8-248176

Int. Cl.[6] B60C *11/11;11/12;11/13*

U.S. Cl. 152—209 R **11 Claims**



1. A pneumatic tire comprising a tread portion,

said tread portion being provided with at least two main grooves extending circumferentially about the tire to axially divide said tread portion into at least three land portions,

at least one of said three land portions being provided with sub-grooves shallower in depth than said at least two main grooves M,

said sub-grooves comprising axial sub-grooves Y extending across said at least one land portion and a circumferential sub-groove G extending continuously in the circumferential direction of the tire,

a width Wg of the circumferential sub-groove being in the range of from 0.05 to 0.60 times a width WM of one of said main grooves,

a width Wy of the axial sub-grooves being in the range of from 0.05 to 0.60 times said width WM of said one of said main groove,

said circumferential sub-groove being provided at the bottom thereof with a circumferential sipe Sg extending continuously in the circumferential direction of the tire,

each of said axial sub-grooves being provided in the bottom thereof with an axial sipe Sy on opposite sides of said circumferential sub-groove,

each said axial sipe having a first end adjacent said circumferential sub-groove and a second end,

wherein said first end does not intersect said circumferential sipe and is closed within the groove bottom.

5,909,757

PNEUMATIC TIRE WITH RADIALLY INNER AND RADIALLY OUTER BEAD CORE

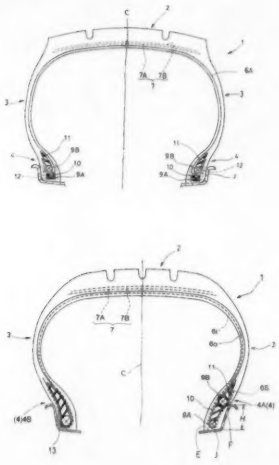
Kiichiro Kakumu, Kobe, and Masatoshi Tanaka, Takarazuka, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Oct. 23, 1996, Appl. No. 733,962

Claims priority, application Japan, Oct. 23, 1995, 7-274398; Nov. 28, 1995, 7-309161; Sep. 18, 1996, 8-246288

Int. Cl.[6] B60C *3/06;9/04;15/00;15/05;15/06*

U.S. Cl. 152—543 **13 Claims**



1. A pneumatic tire comprising:

a tread portion,

a pair of sidewall portions,

a pair of bead portions,

a radially inner bead core disposed in at least one of the bead portions,

a radially outer bead core disposed radially outside the inner bead core,

a buffer rubber layer disposed between the radially inner bead core and radially outer bead core to provide a predetermined space therebetween, said buffer rubber layer having a complex elastic modulus E* in the range of 20 to 100 kgf/sq.cm. and

a toroidal carcass extending between the bead portions through the tread portion and sidewall portions,

the carcass comprising a ply of cords turned up around the radially outer bead core to be secured thereto, passing between the radially outer bead core and the buffer rubber layer, so that radially outward tension of the carcass caused by tire inflation acts less on the radially inner bead core than the radially outer bead core.

13. A pneumatic tire comprising:

a tread portion,

a pair of sidewall portions,

a pair of bead portions,

a radially inner bead core disposed in at least one of the bead portions,

a radially outer bead core disposed radially outside the inner bead core,

a buffer rubber layer disposed between the radially inner bead core and radially outer bead core to provide a predetermined space therebetween, the thickness of said buffer rubber layer, measured in the radial direction of the tire, being in the range of from 2 to 6 mm, and

a toroidal carcass extending between the bead portions through the tread portion and sidewall portions,

the carcass comprising a ply of cords turned up around the radially outer bead core to be secured thereto, passing

between the radially outer bead core and the buffer rubber layer, so that radially outward tension of the carcass caused by tire inflation acts less on the radially inner bead core than the radially outer bead core.

5,909,758

SUPPORTING TOOL AND METHOD OF INSTALLING SAME

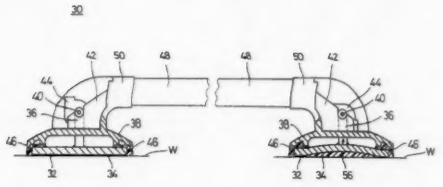
Akio Kitamura, c/o Hokumei Co., Ltd. of 3-12, Shinimazato 1-chome, Ikuno-ku, Osaka-shi, Osaka-fu, JPX, Minoh, Japan

Filed Nov. 21, 1996, Appl. No. 754,526

Claims priority, application Japan, Nov. 27, 1995, 7-332841; Sep. 12, 1996, 8-265528

Int. Cl.[6] A47G 1/17

U.S. Cl. 16—111 R **5 Claims**



5. A method of installing a supporting tool including a sucking pad, at a desired position on an installation surface, the method comprising the steps of:

determining the desired position on which the supporting tool is to be installed;

marking the installation surface at the desired position utilizing a positioning member having a releasable and re-adhesive agent disposed on a rear surface thereof and having a cut-out portion with a substantially semi-circular shape, which substantially supports a lower end portion of the sucking pad during positioning;

temporarily attaching the supporting tool on the installation surface at the marked position via the sucking pad so as to confirm its desired position;

removing the supporting tool from the installation surface;

applying adhesive agent to one main surface of the sucking pad; and

re-attaching the sucking pad containing the adhesive agent to the installation surface as determined by the mark indicating the desired position and drying or hardening the adhesive agent.

5,909,759

STOWABLE NESTING HANDLE CONSTRUCTION

Kazuna Tanaka, Cos Cob; Jeffrey Kapec, Westport, both of Conn., and Yukiko Naoi, New York, N.Y., assignors to Franzus Company, Inc., Beacon Falls, Conn.

Filed Dec. 3, 1997, Appl. No. 984,671

Int. Cl.[6] A47B *95/02*

U.S. Cl. 16—112 **15 Claims**

1. A stowable, foldable handle assembly constructed for being pivotally mounted to a product for assisting in the use of the product and comprising

A. a first handle forming member comprising

a. a grip forming portion, and

b. at least one arm portion

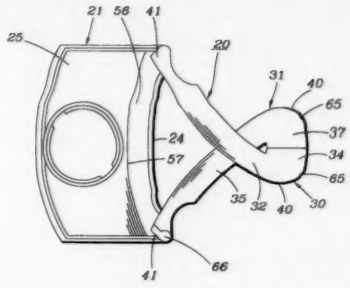
1. mounted to the grip forming portion and extending therefrom, and

2. *terminating at a distal end which is pivotally mounted to* the product, defining a first pivot axis;

B. a second handle forming member comprising

a. a grip forming portion, and

b. at least one arm portion



1. mounted to the grip forming portion and extending therefrom, and

2. terminating at a distal end which is pivotally mounted to the product, defining a second pivot axis;

C. the arm portion of the first handle forming member being mounted in overlying, cooperating, interleaved relationship with the arm portion of the second handle member for enabling said first and second handle forming members to pivot relative to each other in opposite directions; and

D. each of said first and second handle forming members being separately and independently pivotally movable relative to the product between a first stowed position wherein each of said handle forming members is in a nested, fully engaged position with a surface of the product, and a second extended position wherein each of said handle forming members is pivoted into juxtaposed, spaced relationship with said nesting surface, *positioned for easy access and cooperative engagement for* forming a handle;

whereby each of said handle forming members are independently pivotable relative to the product between the first stowed position and the second extended position, with each of the grip forming portions of each of the handle forming members being positioned for cooperation with each other to form a gripping handle for use by a consumer.

5,909,760

STEPLESS EXPANDABLE ROD

James Tsai, 103, Ta-Ming 1 Rd., Tung Pao Tsun, Tan Tzu Hsiang, Taichung Hsien, Taiwan

Filed May 13, 1998, Appl. No. 76,780

Int. Cl.[6] A47B 95/02

U.S. Cl. 16—115 **3 Claims**

1. A stepless expandable rod comprising:

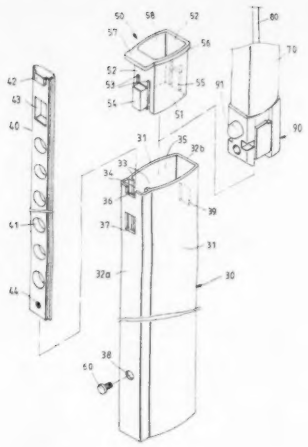
an outer tube provided in an inner wall thereof with two protuberances of a length and extending along the direction of a longitudinal axis of said outer tube, said outer tube having an interior which is divided by said protuberances into an insertion slot and a tube compartment greater in cross-sectional area than said insertion slot;

an insertion strip provided along the direction of a longitudinal axis thereof with a plurality of retaining holes parallel to one another, said insertion strip being securely lodged in said insertion slot of said outer tube;

an inner tube received in said tube compartment of said outer tube such that said inner tube can be extracted and retracted from a top end of said outer tube;

a connection rod received in said inner tube such that a top end *of said connection rod is connected with an external control* mechanism, and that said connection rod can be controlled by the external control mechanism to displace along the direction *of a longitudinal axis of said inner tube*;

a retaining member fastened with a bottom end of said inner tube and connected with a bottom end of said connection rod, said retaining member having a retaining projection capable of being actuated by said connection rod to extract toward one



side of said insertion strip to engage one of said retaining holes of said insertion strip so as to cause a bottom end of said inner tube to be retained at a position in said outer tube, said retaining projection further capable of being actuated by said connection rod to retract in a direction away from said one side of said insertion strip; and

wherein a first short side tube wall of said outer tube is provided at a top end thereof with a fastening hole, and at a bottom end thereof with a through hole, said first short side tube wall corresponding in location to one side of said insertion slot of said outer tube, said outer tube having a second short side tube wall which is provided with a retaining hole corresponding in location to said fastening hole; wherein said insertion strip has an insertion hole opposite to said fastening hole, and a through hole opposite to said through hole of said first short side tube wall of said outer tube; wherein a tubular member has a rectangular body which is provided respectively in two opposite sides thereof with two grooves, with one of said two sides being provided with a thick protruded block located between said two grooves, and with another one of said two sides being provided with a flat protruded block located between said two grooves, said rectangular body further provided at a top edge thereof with a lip, and a cover plate corresponding in location to a side edge of said thick protruded block, said rectangular body being inserted into a top end of said tube compartment such that said lip is retained at a top edge of said outer tube, and that said cover plate covers said insertion slot, and further that said thick protruded block is retained in said fastening hole of said outer tube via said insertion hole of said insertion strip, and still further that said flat protruded block is retained in said retaining hole of said outer tube; and wherein said outer tube and said insertion strip are fastened securely with each other by a fastening member which is inserted into said through hole of said outer tube and said through hole of said insertion strip.

5,909,761

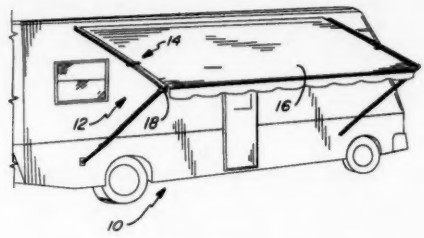
COMBINATION AWNING CLAMP AND RAFTER ARM LOCK WITH CANOPY TENSIONING CAPABILITIES

Brent W. Murray, Longmont, Colo., assignor to Carefree/Scott Fetzer Company, Broomfield, Colo.

Provisional application No. 60/031,608, Nov. 27, 1996. This application Nov. 24, 1997, Appl. No. 976,735.

Int. Cl.[6] E04F *10/06*

U.S. Cl. 160—71 **11 Claims**



1. A clamp for stabilizing the canopy of a retractable awning wherein the retractable awning is mounted on a support surface so as to be movable between extended and retracted positions, said awning including a canopy having an inner edge operatively connected to said support surface, an outer edge positionable away from said support surface when the awning is extended and a pair of side edges, a pair of rafter arms having longitudinally slidable inner and outer elements with the inner elements having an inner end operatively secured to the supporting surface and the outer elements having an outer end movable away from the supporting surface and operatively supporting said outer edge of the canopy such that the rafter arms extend in closely adjacent relationship to said side edges of the canopy when the awning is extended, said clamp being mounted upon at least one of said rafter arms and comprising in combination:

a base pivotally connected to said rafter arm and movable between a use position and a non-use position, said base including a clip adapted to releasably grip a side edge of said canopy in said use position to substantially immobilize said side edge relative to said rafter arm at the location where said side edge is gripped by said clip, and

a lock for positively but releasably fixing the longitudinal relationship of said inner and outer elements of the rafter arm to which the clamp is connected.

5,909,762

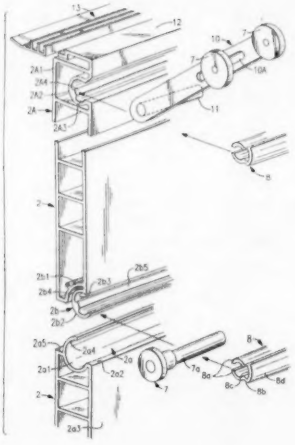
SECTIONAL CLOSING DOORS

Daniel Denoual, Saint Genevieve des Bois, and Maurice Perroux, Saint Etienne, both of France, assignors to Fit Carrosserie SA, France

Filed Dec. 9, 1997, Appl. No. 987,542

Int. Cl.[6] E05D *15/06*

U.S. Cl. 160—201 **4 Claims**



1. A sectional door assembly comprising:

a plurality of panels consecutively coupled together, each said panel having at least integral one profiled end form over at least a portion of a length thereof, in which two end forms define between consecutively coupled panels an open-ended swivel joint;

moving means associated with said coupled panels for allowing said coupled panels to be moved between a vertical position and a horizontal position in order to allow door opening and door closing;

connecting bars associated with said moving means to allow moving of all of said coupled panels, said at least one end form having an interior profile sized to allow the positioning and housing of said connecting bars over at least a portion of the length of said profile; and

at least one profiled matching part, said end forms when coupled being arranged to allow the reception and interlocking of said at least one profiled matching part constituting a rider made in one or more parts over the length of said coupled panels and forming a cover to close the open-ended swivel joint,

said plurality of panels including a top panel, a bottom panel and a predetermined number of intermediately coupled panels therebetween, said intermediately coupled panels each having a first end form and a second end form, said first end form including a partially spherical section defined by a pair of ends, wherein interior and exterior surfaces of said partially spherical section define a housing, each of said ends of said partially spherical section extending from a side edge of said panel, one of said ends of said partially spherical section protruding from one end of said panel while the other of said ends of said partially spherical section extends to an outside plane of the panel,

in which said second end form includes a curved interior section having a radius corresponding to a radius of the exterior surface of the partially spherical section of the first end form of an adjacently coupled panel, constituting a support and reference plane, said interior section being prolonged on the outside by an open ended spherical shaped protruding part having an opening and an arcuate slot, said arcuate slot being bordered on one side by said curved interior portion and on an opposite side by an exterior surface of said protruding part, said arcuate slot forming a housing for the protruding end of said first end form, wherein the open ends of said partially spherical section and said protruding part face the outside plane of said panels when consecutive panels are in axial alignment after said first and second end forms are coupled together,

in which the partially spherical section of the first end form further includes a bottom interior portion, said interior bottom portion presenting a projecting curvilinear form for forming the seat of a roller pin, the inside diameter of said partially spherical section allowing the positioning, centering and retention of said roller pin,

and in which said first and second end forms, when coupled, define an opening sized for receiving at least one profiled matching part, said at least one profiled matching part having a substantially U-shaped profile and including a pair of elastically deformable wings and an outside portion having a partially spherical profile, said outside portion interlocking in the opening defined in said coupled end forms to close the swivel joint.

5,909,763

INSULATIVE WINDOW ASSEMBLY

Paul G. Link, R.D. 1 Box 43, and Jeffrey T. Turner, R.D. 5 Box 397A, both of Bedford, Pa. 15522

Filed Dec. 16, 1997, Appl. No. 991,172

Int. Cl.[6] E06B *9/56*

U.S. Cl. 160—269 **19 Claims**

1. An insulative window assembly, for a window space having two sides, a top and bottom, comprising:

a blind cover mounted at the top of the window space;

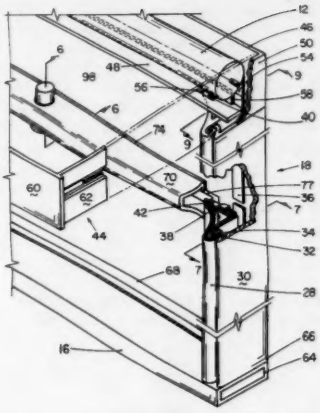
a blind mounted in said blind cover;

a rail back mounted along each side of the window space;

a rail face rotatably fixed to each rail back for closing against said rail back and trapping said blind between said rail back and said rail face in order to seal the sides of the window space;

a first strip magnet mounted along said rail back;

a second strip magnet opposite in polarity to said first strip magnet mounted along said rail face; and



said first and second strip magnets mounted to aligned in parallel against each other when the rail face closes against the rail back, thereby trapping said blind between said first and second strip magnets and providing the sealing of the sides of the window space due to attraction of the strip magnets.

5,909,764

VERTICAL CASTER AND ASSOCIATED METHOD

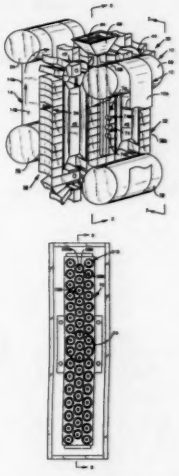
Adam J. Sartschev, Allison Park, and Joshua C. Liu, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of application No. 08/310,142, Sep. 20, 1994, Pat. No. 5,725,046. This application Mar. 6, 1998, Appl. No. 36,308.

This patent is subject to a terminal disclaimer

Int. Cl.[6] B22D *11/06*

U.S. Cl. 164—481 **20 Claims**



1. A vertical caster for casting molten metal into cast metal product in a casting zone, said vertical caster having an upper portion and a lower portion with said molten metal being introduced into said upper portion and said metal product exiting said lower portion, said vertical caster further including (i) a pair of movable opposed belts each having a casting surface and a cooling surface; (ii) a pair of opposed side dams having casting surfaces that cooperate with said casting surface of said belts to define a

casting zone for solidifying said molten metal into said cast metal product; and (iii) a cooling wall having a plurality of nozzles in it for directing a jet of coolant at said cooling surface of said belt, said nozzles in said upper portion each including a concave guiding surface having a first depth such that said jet of coolant creates a vacuum to pull said belts toward said nozzles such that belt distortion is resisted and said nozzles in said lower portion each including a guiding surface that is either (x) concave having a second depth, said second depth being less than said first depth of said concave guiding surfaces of said nozzles in said upper portion, or (y) substantially flat such that said jet of coolant creates a pressure to push said belt away from said nozzles such that intimate surface-to-surface contact between said casting surfaces of said belt and the solidifying molten metal is maintained.

8. The caster of claim **1**, wherein

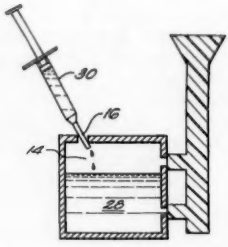
said casting surface of said side dams has at least one slit for accommodating thermal expansion of said dams.

5,909,765

METHOD OF PRODUCING INVESTMENT CASTINGS FOR STEREOLITHOGRAPHY PATTERNS

Christopher S. McDowell, Bridgewater, Mass., assignor to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Oct. 20, 1997, Appl. No. 953,890
Int. Cl.[6] **B22C** *7/02;9/04*
U.S. Cl. 164—516 **15 Claims**



1. A method of producing an investment casting shell comprising the steps of:

providing an investment casting pattern that defines a cavity;

filling the cavity with a fluid;

sealing the fluid within the cavity;

forming a ceramic mold around the investment casting pattern; and

heating the ceramic mold until the investment casting pattern softens;

removing the investment casting pattern and the fluid from the ceramic mold.

5,909,766

HEAT EXCHANGER HAVING A STRUCTURE FOR DETECTING FLUID LEAKAGE

Osamu Kobayashi, Kariya, and Ken Yamamoto, Obu, both of Japan, assignors to Denso Corporation, Kariya, Japan

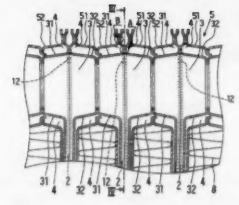
Filed Jun. 29, 1998, Appl. No. 107,151
Int. Cl.[6] **F28F** *11/00*
U.S. Cl. 165—70 **9 Claims**

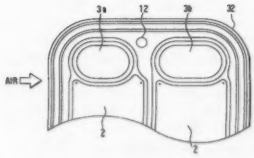
1. A heat exchanger comprising:

a plurality of tubes through which a first fluid flows;

a plurality of tank portions connected at both ends of each tube, for distributing said first fluid to said tubes and for collecting said first fluid from said tubes; and

a plurality of covering members which cover said tubes and said tank portions to form a plurality of openings between said covering members, said tubes and said tank portions, wherein:





said tubes and said tank portions are formed by a plurality of first plates laminated and connected to each other;

said covering members are formed by a plurality of second plates which are laminated in accordance with the lamination of said first plates to form said openings separated by said first plates; and

each of said first plates has a communication hole through which said openings separated by said first plates communicates with each other.

9. A heat exchanger comprising:

a plurality of tubes through which a first fluid flows;

a plurality of tank portions connected at both ends of each tube, for distributing said first fluid to said tubes and for collecting said first fluid from said tubes; and

a plurality of covering members for covering said tubes and tank portions to form a plurality of openings between said covering members, said tubes and said tank portions, wherein:

said tubes and said tank portions are formed by a plurality of first plates laminated and connected to each other;

said covering members are formed by a plurality of second plates which are laminated in accordance with the lamination of said first plates to form said openings separated by said second plates; and

each of said second plates has a communication hole through which said openings separated by said second plates communicates with each other.

5,909,767

RECUPERATIVE CROSS FLOW PLATE-TYPE HEAT EXCHANGER

Paul J. Batt, Wellsville, N.Y., assignor to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed Mar. 12, 1998, Appl. No. 41,554
Int. Cl.[6] **F28F** *3/00*
U.S. Cl. 165—166 **1 Claim**

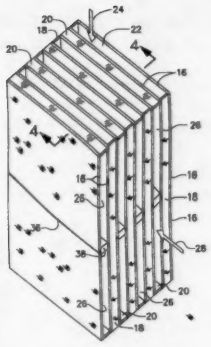
1. A recuperative cross flow plate-type heat exchanger comprising first and second modules directly adjacent to each other, each said module comprising:

a. plurality of spaced apart parallel heat exchange plates, said spaced apart plates forming alternating first and second channels for a first gas and a second gas;

b. said plates forming said first channels being spaced apart by first spacer bars extending along two opposite edges of said plates thereby forming said first channels therebetween for said first gas;

c. said plates forming said second channels being spaced apart by second spacer bars extending along two opposite edges of said plates thereby forming said second channels therebetween for said second gas;

d. said first channels being perpendicular to said second channels and said first channels in said first modules aligning with



said first channels in said second modules whereby said first gas flows serially through said first channels in said first and second modules; and

wherein said second spacer bars at said edges between adjacent modules each comprise one common spacer bar extending between and into both said adjacent first and second modules.

5,909,768

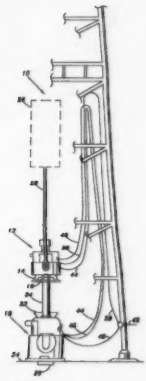
APPARATUS AND METHOD FOR IMPROVED TUBULAR GRIP ASSURANCE

Dale J. Castille; Michael Webre, and Donald Mosing, all of Lafayette, La., assignors to Frank's Casing Crews and Rental Tools, Inc., Lafayette, La.

Continuation of application No. 08/783,933, Jan. 17, 1997. This application May 2, 1998, Appl. No. 71,999.

Int. Cl.[6] E21B *7/20*

U.S. Cl. 166—77.1 **8 Claims**



1. An apparatus for controlling the gripping and releasing of a tubular member, the apparatus comprising:

an elevator with a set of slips for optionally gripping and releasing a tubular member;

a spider with a set of slips for optionally gripping and releasing said tubular member; and

a pressure circuit in communication with said elevator slips and said spider slips, wherein said pressure circuit controls the supply of pressure to release one set of slips only when the other set of slips is gripping said tubular member.

5,909,769

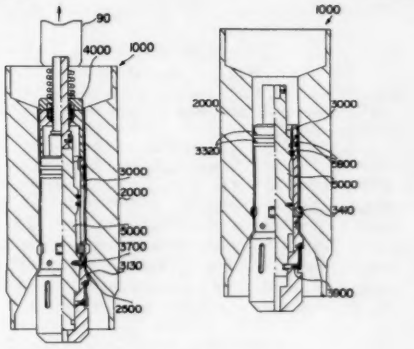
FLUID LOSS DEVICE

Peter A. Duhon, Harvey, and Kennedy J. Brown, Marrero, both of La., assignors to Halliburton Energy Services, Inc., Dallas, Tex.

Division of application No. 08/600,840, Feb. 13, 1996, Pat. No. 5,775,421. This application Apr. 10, 1998, Appl. No. 58,548.

Int. Cl.[6] E21B *33/12*

U.S. Cl. 166—115 **7 Claims**



1. A fluid loss device comprising:

a housing having a longitudinal bore therethrough;

a seal assembly having a plug bore therethrough;

a running tool;

a plug detachably attached to the running tool;

a housing seal for sealing between the seal assembly and the longitudinal bore in the housing;

means for releasably securing the seal assembly within the longitudinal bore of the housing such that the housing seal provides a seal between the seal assembly and the longitudinal bore of the housing;

a plug seal for sealing engagement between the plug bore of the seal assembly and the plug; and

means for releasably securing the plug within the plug bore of the seal assembly such that the plug seal provides a seal between the plug and the plug bore of the seal assembly:

wherein:

the plug has a shear pin recess in a shear pin surface;

the seal assembly has a shear pin aperture;

the means for securing the plug includes a shear pin disposed within the shear pin aperture of the seal assembly and means for forcing the shear pin against the shear pin surface of the plug such that alignment of the shear pin recess in the plug with the shear pin forces the shear pin into engagement with the shear pin recess of the plug and the shear pin aperture of the seal assembly.

5,909,770

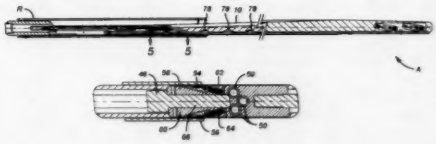
RETRIEVABLE WHIPSTOCK

John P. Davis, Cypress, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Provisional application No. 60/033,195, Nov. 18, 1996. This application Aug. 13, 1997, Appl. No. 910,797.

Int. Cl.[6] E21B *7/08*

U.S. Cl. 166—117.6 **20 Claims**



1. A retrievable, thru-tubing whipstock, set in a cased or uncased borehole, comprising:

a whipstock;

a collapsible anchor assembly actuable by an actuator mounted to the whipstock;

a lock mechanism on the actuator mechanism to selectively hold the anchor assembly when the whipstock is in use and to selectively release the anchor assembly when the whipstock is to be retrieved.

5,909,771

WELLBORE VALVE

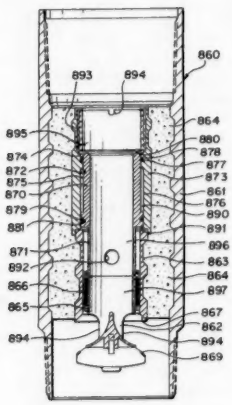
Richard L. Giroux, Katy, Tex., and Peter Budde, KC Vlaardigen, Netherlands, assignors to Weatherford/Lamb, Inc., Houston, Tex.

Continuation-in-part of application No. 08/641,009, Apr. 29, 1996, Pat. No. 5,690,177, and application No. 08/868,511, Jun. 4, 1997, Pat. No. 5,804,592, which is a continuation-in-part of application No. 08/639,886, Apr. 29, 1996, Pat. No. 5,680,902, which is a continuation of application No. 08/519,503, Aug. 25, 1995, Pat. No. 5,511,618, which is a continuation of application No. 08/283,404, Aug. 1, 1994, Pat. No. 5,450,903, said application No. 08/641,009 is a continuation of application No. 08/519,503. This application Nov. 24, 1997, Appl. No. 977,466.

Claims priority, application United Kingdom, Mar. 22, 1994, 9405679

Int. Cl.[6] E21B *33/13*

U.S. Cl. 166—120 **9 Claims**



1. A fill valve for use in cementing operations in a wellbore extending down into the earth, the fill vale comprising

a tubular housing having a valve seat,

a valve member slidably mounted in said tubular housing,

spring means for biasing said valve member towards a closed position,

said valve member comprising a head engageable with said valve seat of said tubular housing to close the valve,

selectively releasable apparatus for releasably maintaining the fill valve in an open position, and

the selectively releasable apparatus including a shear ring breakable in response to force thereon, a slider movably disposed in a slider housing mounted in the tubular housing and movable to exert force on the shear ring to break the shear ring, a lower end of the slider initially projecting down and out from the slider housing and abutting a top end of the valve member and preventing the valve member from moving, a top end of the slider abutting the shear ring, the slider prevented initially move moving by the shear ring, the slider movable in response to a hydrostatic head pressure of fluid in the wellbore imposing an upward force on the valve member.

5,909,772

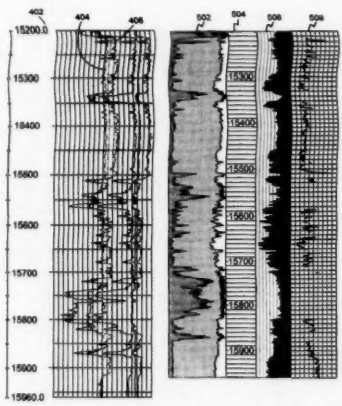
APPARATUS AND METHOD FOR ESTIMATING LIQUID YIELD OF A GAS/CONDENSATE RESERVOIR

Richard H. Merkel, Evergreen, and Michael J. Uland, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Apr. 4, 1997, Appl. No. 835,154

Int. Cl.[6] E21B *47/00*

U.S. Cl. 166—250.16 **9 Claims**



1. A method for determining a liquid yield from a gas/condensate within a gas/condensate reservoir, said method comprising the steps of:

(a) measuring a porosity of minerals at each depth within said reservoir;

(b) extending a pulse neutron capture logging tool into said reservoir and measuring RICS and RATO data at each depth within said reservoir;

(c) combining said porosity, said RICS and said RATO data at each depth to create a yield at each depth;

(d) plotting said yield created in step (c) for each depth;

(e) selecting a depth from said plot produced in step (d) to provide a predetermined yield; and

(f) perforating a casing of a well within said reservoir at said depth selected in step (e).

5,909,773

METHOD OF REPAIRING A DAMAGED WELL

Paul C. Koehler; Stephen A. Geibel; Michael B. Whitlock, all of Cortland; Reza Hashemi, Sea Cliff, and Christophe A. Malbrel, New York, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

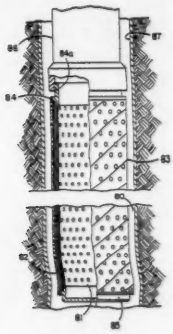
Division of application No. 08/351,658, Dec. 7, 1994, Pat. No. 5,664,628, which is a continuation-in-part of application No. 08/223,149, Apr. 25, 1994, abandoned, which is a continuation-in-part of application No. 08/065,908, May 25, 1993, abandoned. This application Jun. 18, 1997, Appl. No. 878,078.

Int. Cl.[6] E21B *43/10*

U.S. Cl. 166—277 **25 Claims**

1. A method of repairing a damaged well comprising:

lowering a filter having a supported porous medium into a well having a damaged sand screen, the supported porous medium comprising a foraminate support and particulates sintered to the foraminate support; and



filtering fluid having passed through the damaged sand screen with the filter.

5,909,774

SYNTHETIC OIL-WATER EMULSION DRILL-IN FLUID CLEANUP METHODS

James E. Griffith, Loco; Jiten Chatterji, Duncan; Bobby J. King, Duncan; Bryan K. Waugh, Duncan, and Patty L. Onan, Duncan, all of Okla., assignors to Halliburton Energy Services, Inc., Duncan, Okla.

Filed Sep. 22, 1997, Appl. No. 935,276
Int. Cl.[6] E21B *43/27;43/28*
U.S. Cl. 166—312 **20 Claims**

1. A method of cleaning up a producing interval of a well bore drilled using a synthetic oil-water emulsion drill-in fluid and having filter cake and drill-in fluid on the walls thereof comprising the steps of:

(a) contacting said filter cake and drill-in fluid in a first stage with a first treatment fluid comprised of water, a filter cake dissolving acid present in said treatment fluid in an amount in the range of from about 1% to about 7.5% by weight of said water, a mutual solvent for making otherwise insoluble materials soluble in said treatment fluid present in an amount in the range of from about 10% to about 20% by weight of said water and an emulsion penetrating agent present in an amount in the range of from about 10% to about 20% by weight of said water;

(b) contacting said filter cake and drill-in fluid in a second stage with a second treatment fluid comprised of water, a filter cake dissolving acid present in said treatment fluid in an amount in the range of from about 10% to about 25% by weight of said water, a mutual solvent present in an amount in the range of from about 10% to about 20% by weight of said water and an emulsion penetrating agent present in an amount in the range of from about 10% to about 20% by weight of said water; and

(c) contacting said filter cake and said drill-in fluid in a third stage with a third treatment fluid comprised of water, a filter cake dissolving acid present in said treatment fluid in an amount in the range of from about 10% to about 25% by weight of said water and an effective amount of a water wetting surfactant to change the wettability of said walls of said well bore from oil wet to water wet.

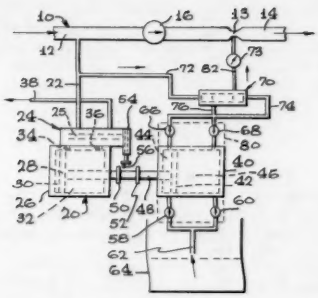
5,909,775

DUAL CHAMBER FOAM PUMP

Robert M. Grindley, 1989-A Blake Ave., Los Angeles, Calif. 90039

Filed Sep. 10, 1997, Appl. No. 926,653
Int. Cl.[6] A62C *35/00*
U.S. Cl. 169—14 **10 Claims**

3. A fire fighting system for proportioning the injection of foaming agent into a stream of water comprising



a water conduit having an inlet and an outlet;

a venturi and valve means in said water conduit for maintaining a pressure differential between said inlet and said outlet;

a foaming agent reservoir;

conduit means connected to said reservoir and pump means in said conduit means for supplying foaming agent to said venturi;

a pump connected to said inlet and to said pump means for driving said pump means;

an operating valve connected to said inlet for supplying water under pressure to said pump;

an equalizing valve in said conduit means having a first pressure sensing area exposed to the pressure of the foaming agent from said pump means and a second pressure sensing area exposed to the water pressure at said inlet; and

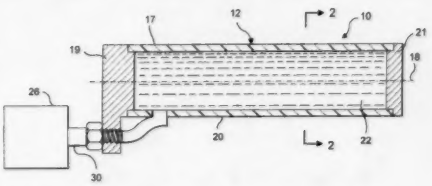
a metering valve in said conduit means for establishing a desired proportion of foaming agent to water in said water conduit.

5,909,776

FIRE EXTINGUISHERS

Harry E. Stewart, Malvern, and Donald B. MacElwee, Wayne, both of Pa., assignors to Powsus Inc., Malvern, Pa.

Filed Apr. 16, 1997, Appl. No. 835,813
Int. Cl.[6] A62C *35/10*
U.S. Cl. 169—26 **16 Claims**



1. A linear fire extinguisher system, which comprises;

(a) an elongated tubular container with closed first and second ends;

said tubular container with first and second ends having side walls defining a closed, elongate chamber;

said tubular container side walls being molded of a thermoplastic, synthetic polymeric resin; which is substantially impermeable to leakage of the fire-extinguishing composition described below; and

said container walls being adapted by size and material of fabrication to rupture under superatmospheric pressures upon reaching a flame temperature; and

(b) an effective proportion of a substantially non-aqueous fluid fire extinguishing composition contained in the elongate chamber under superatmospheric pressures at temperatures below a flame temperature;

said fire-extinguishing composition comprising a gas selected from the group consisting of a perfluorocarbon, a hydrochlorofluorocarbon and a hydrofluorocarbon into which there is

dispersed particles of dry powder fire-extinguishing agent having average particle sizes of a maximum of 500 microns; said fire-extinguishing composition being a gel having a yield stress of at least about 200 dynes per cm^2 incorporating a surfactant and deflocculant stabilizing system.

5,909,777

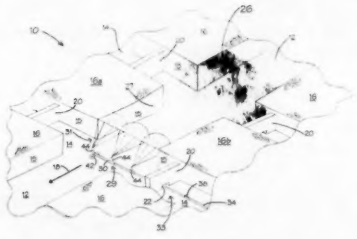
METHOD AND APPARATUS FOR STOPPING THE SPREAD OF A FIRE IN AN UNDERGROUND MINE

Will B. Jamison, McMurray, Pa., assignor to Jamison Family Trust, McMurray, Pa.

Continuation-in-part of application No. 08/747,449, Nov. 12, 1996, abandoned. This application Oct. 31, 1997, Appl. No. 961,686.

Int. Cl.[6] **A62C** *2/08*

U.S. Cl. 169—43 **27 Claims**



15. A method for stopping spread of a fire in an underground mine the method comprising the steps of:

advancing a preselected length of a nozzle pipe along a floor of the mine to a preselected position therein,

connecting spray nozzles to a plurality of outlets positioned in spaced relation on a section of the nozzle pipe and extending through a top of the nozzle pipe,

supplying water under pressure through the nozzle pipe,

directing a flow of the water under pressure from the nozzle pipe through the outlets to the spray nozzles,

discharging the water under pressure in a spray pattern from the spray nozzles,

casting the spray pattern of the water upwardly from the nozzle pipe to form a curtain of water along the length of the nozzle pipe in a preselected orientation, and

preventing the fire from spreading in the underground mine beyond the curtain of water.

5,909,778

HAND-HELD SOIL TILLING SYSTEM

Zelman Acosta, and Luz M Acosta, both of 2137 N. Campbell, Chicago, Ill. 60647

Filed Aug. 27, 1998, Appl. No. 141,195

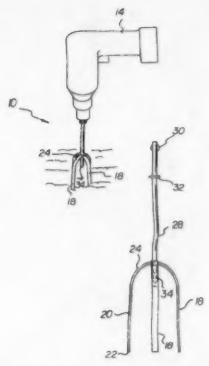
Int. Cl.[6] ***A01B*** *33/06;35/28*

U.S. Cl. 172—111 **1 Claim**

1. A hand-held soil tilling system for tilling soil through action of a hand-held beater with blades comprising, in combination:

a hand-held electrical machine adapted to receive a tool for selectively causing rotation thereof;

four tiller components, each tiller component including a substantially planar elongated central extent formed with a point at its end defined by side edges of the tiller component which converge to define a triangle which resides within a plane in which the central extent of the tiller component resides, each tiller component also including an upper extent in a curved configuration terminating adjacent to a common axis of rotation and with a length of each central extent being about three times greater than a radius of curvature of the upper extents, the tiller components being flared outwardly with a distance therebetween being greater adjacent to lower ends than adjacent to upper ends thereof; and



a cylindrical coupling post having an upper extent formed with projections and a flange to allow coupling with the electrical machine and a lower end adapted to receive thereadjacent the upper ends of the tiller components.

5,909,779

OIL-BASED DRILLING FLUIDS SUITABLE FOR DRILLING IN THE PRESENCE OF ACIDIC GASES

Arvind D. Patel; Jayanti S. Patel, and Harris A Oehler, all of Houston, Tex., assignors to *M-I L.L.C., Houston, Tex.*

Provisional application No. 60/057,038, Aug. 19, 1997. This application Jun. 30, 1998, Appl. No. 108,025.

Int. Cl.[6] **E21B** *21/00;49/00;* **C09K** *7/06*

U.S. Cl. 175—50 **17 Claims**

1. An oil-based drilling fluid comprising

an oleaginous liquid and an amine-surfactant, wherein said amine surfactant has the general formula:

$$RNH_2$$

wherein R represents a C_{12}–C_{22} alkyl group, a C_{12}–C_{22} alkenyl group or alkyl substituted cyclo alkyl group, and said surfactant being present in amounts sufficient to stabilize the rheology and the HTHP fluid loss properties of said oil-based drilling fluid in the presence of acidic gases.

17. A method for logging acidic gases in a drilling fluid which encounters such gases during the drilling of a subterranean well the drilling fluid, the method comprising: formulating an alkaline-reserve-free drilling fluid, the drilling fluid including an oleaginous liquid and an amine-surfactant, said surfactant being present in amounts sufficient to stabilize the rheology and the HTHP fluid loss properties of said oil-based drilling fluid in the presence of acidic gases; drilling said subterranean well with said drilling fluid; and determining the acidic gas content of said drilling fluid.

5,909,780

VEHICLE FOR UNDERGROUND MINE SHAFTS

John De Andrade, Karrabin, Australia, assignor to Ani Mining Services Ltd, Queensland, Australia

PCT No. PCT/AU95/00511, § **371** Date Feb. **18**, **1997**, § **102**(e) Date Feb. **18**, **1997**, PCT Pub. No. **WO96/05996**, PCT Pub. Date Feb. **29**, **1996**

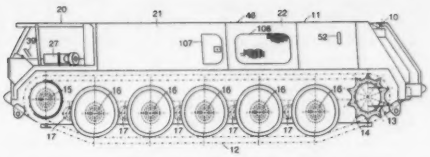
PCT Filed Aug. 17, 1995, Appl. No. **793,818**

Claims priority, application Australia, Aug. 22, 1994, 7581; Aug. **22**, **1994**, **7582**; Aug. **22**, **1994**, **7583**

Int. Cl.[6] **B62D 55/00**

U.S. Cl. 180—9.58 **20** Claims

1. A vehicle for underground mine shafts comprising a body having a cabin located in a front section of the vehicle with an entry to the cabin located at the front of the vehicle, a door at the entry, a sensor for sensing when the door is open and control



circuitry which is connected to the sensor and vehicle brakes to activate the vehicle brakes when the sensor senses that the door is open, a pair of tracks on either side of the cabin, a driving means for driving the tracks, a steering means for steering the body, a suspension system including a torsion bar suspension arrangement which permits torsion bars of the vehicle to be located just above the level of track wheels of the vehicle, the torsion bar suspension arrangement having a torsion bar receiving means for applying torsion to the torsion bars and a torsion adjusting means including engagement means being capable of orientation at a predetermined angle with respect to a vertical axis for engaging the torsion bar receiving means and a member having a channel formed therein for receipt of the engagement means, wherein the torsion adjusting means is arranged to urge the torsion bar receiving means to a predetermined orientation.

5,909,781

POWER-ASSISTING DEVICE FOR A BICYCLE AND A BICYCLE EQUIPPED WITH THE SAME

Mitsuhisa Yonekawa, Kawasaki, and Atsushi Takayama, Hadano, both of Japan, assignors to Kabushiki Kaisha TEC, Shizuoka, Japan

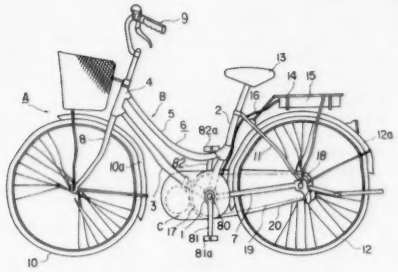
PCT No. PCT/JP96/01153, § 371 Date Dec. 24, 1996, § 102(e) Date Dec. 24, 1996, PCT Pub. No. WO96/33906, PCT Pub. Date Oct. 31, 1996

PCT Filed Apr. 26, 1996, Appl. No. 765,614

Claims priority, application Japan, Apr. 28, 1995, 7-106306

Int. Cl.[6] B62K *11/00*

U.S. Cl. 180—206 **7 Claims**



1. A power-assisting device adapted for use with a bicycle, said power-assisting device comprising:

a hollow shaft which is adapted to be rotatably supported in a hanger lug of the bicycle, said hollow shaft being restricted to movement along a rotation center line thereof, and said hollow shaft having (i) a first end portion adapted to be projected out of the hanger lug and detachably attached to a rear wheel drive gear, and (ii) a second end portion adapted to be projected out of the hanger lug and detachably attached to an input gear;

a crank shaft which is rotatably supported in a center hole of the hollow shaft, said crank shaft being restricted to movement along a rotation center line thereof, and said crank shaft having (i) a first end portion extending out of the hollow shaft and adapted to be detachably attached to a first one of a pair of pedal-equipped crank arms and (ii) a second end portion extending out of the hollow shaft and adapted to be detachably attached to a second one of the pair of pedal-equipped crank arms;

a power-assisting unit which is adapted to be detachably attached to a body of the bicycle, said power-assisting unit having a motor and a rotation force transmission mechanism adapted to transmit a motor rotation force from the motor to the input gear, and said rotation force transmission mechanism having a one-way clutch for transmitting the motor rotation force to the input gear only in a direction for driving the bicycle forward; and

a rotation force control unit which is interposed between the crank shaft and the hollow shaft outside the hanger lug, said rotation force control unit transmitting a rotation force of the crank shaft to the hollow shaft and controlling the motor to generate the motor rotation force when a value of the rotation force of the crank shaft becomes larger than a predetermined value.

5,909,782

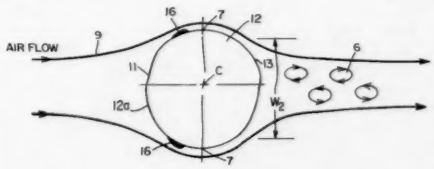
CYLINDRICAL MEMBER WITH REDUCED AIR FLOW RESISTANCE

Frederic L. Pluff, and Paula N. Pluff, both of 3 Bancroft Rd., Newton, N.H. 03858

Filed Feb. 10, 1997, Appl. No. 797,431

Int. Cl.[6] B60K *13/04*

U.S. Cl. 180—309 **18 Claims**



1. An elongate member for positioning transverse to a fluid flow, the elongate member having a curved outer surface, a first elongate substantially uninterrupted flow transition inducing structure being positioned on and extending along a substantial longitudinal length of the outer surface of the elongate member transverse to the fluid flow in the range of 50° to 80° away from the fluid flow for reducing fluid flow resistance on the elongate member.

5,909,783

MOTORIZED SCAFFOLD HOISTING APPARATUS

Robert P. Berish, Sharon, Mass., assignor to Quality Steel Products, Inc., Stoughton, Mass.

Filed May 28, 1997, Appl. No. 864,276

Int. Cl.[6] E04G *1/20*

U.S. Cl. 182—146 **26 Claims**

1. A scaffolding hoisting apparatus comprising:

a frame adapted to slidingly embrace a pole having a lower end and an upper end, said frame comprising first and second side walls;

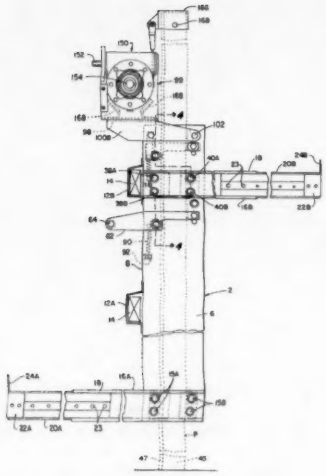
scaffold support means attached to and carried by said frame;

a hoist support pivotally mounted to said frame;

a first brake unit carried by said frame, said first brake unit comprising a brake pad assembly disposed between said first and second side walls and movable into and out of frictional engagement with said pole, means normally biasing said brake pad assembly for frictional contact with said pole, and manually operable means for moving said brake pad assembly out of engagement with said pole;

a second brake unit associated with said hoist support having means for making frictional contact with said pole; and

a hoist carried by said hoist support, said hoist comprising a rotatable drum, a cable having first and second ends with said first end attached to said drum and said second end adapted to be secured to said upper end of said pole, and a power transmission means having an output shaft connected to said



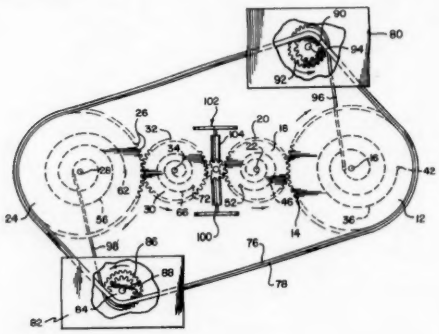
drum and an input shaft that is coupled to said output shaft and is adapted to be connected to a source of rotative power, whereby application of rotative power to said input shaft will cause said output shaft and thereby said drum to rotate in response to rotation of said input shaft, so as to cause said cable to wind on or unwind from said drum.

5,909,784

SPRING MOTOR

Theodore O. Best, 1596 Union Port Rd., Apt. 5-H, Bronx, N.Y. 10462

Filed Nov. 10, 1997, Appl. No. 966,795
Int. Cl.[6] F03G *1/00*
U.S. Cl. 185—10 **1 Claim**



1. A spring motor, comprising:

a frame;

a first gear having peripheral teeth, said first gear rotatably supported by a first shaft;

a second gear having peripheral teeth, said second gear rotatably supported by a second shaft, said first and second shafts being mounted to said frame;

a first coil spring positioned about said first shaft and attached to said first gear and said frame;

a second coil spring positioned about said second shaft and attached to said second gear and said frame;

said peripheral teeth of said first gear are connected to said peripheral teeth of said second gear so that rotation of said first gear causes rotation of said second gear;

said first and second coil springs being opposingly wound so that potential energy stored in said first coil spring is mechanically transferred to said second coil spring through rotation of said first and second gears, said transfer occurring in an oscillatory manner;

a chain attached to said peripheral teeth of said gears so that said chain is linearly displaced as said gears oscillate; and

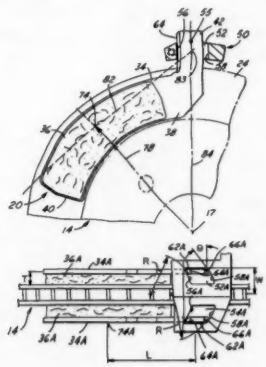
means for transforming said linear displacement of said chain to rotational displacement of said first gear.

5,909,785

TWIN RAMP BRAKE PAD REACTION MEMBER

Robert P. Uhlig, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 10, 1997, Appl. No. **988,062**
Int. Cl.[6] F16D 65/14;65/38
U.S. Cl. 188—250 G **14 Claims**



10. A brake pad reaction member for first and second disc brake pads engagable with opposite sides of an axially rotatable rotor,

said brake pad reaction member having a first reaction surface for reacting braking forces from said first brake pad and a second reaction surface for reacting forces from said second brake pad,

said first and second reaction surfaces converging toward each other relative to a line parallel to the axis of rotation of said rotor in a direction such that said reaction surfaces define an included angle of less than 180°.

5,909,786

APPARATUS AND METHOD FOR REDUCING FIBER WASTE BY LINT CLEANERS

William Stanley Anthony, Greenville, Miss., assignor to The United States of America as represented by the United States Department of Agriculture, Washington, D.C.

Filed Jun. 30, 1998, Appl. No. 107,799
Int. Cl.[6] D01B *1/04*
U.S. Cl. 19—41 **26 Claims**

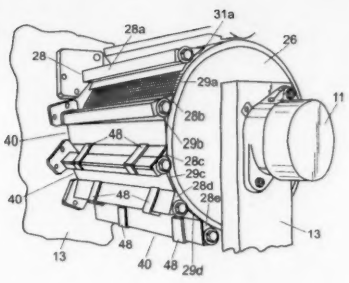
1. An apparatus for cleaning cotton comprising:

a frame;

a cylinder member rotatably supported by the frame and having a cylindrical surface supporting a fiber-engaging structure;

a motor coupled to the cylinder member;

a grid assembly connected to the frame for assisting in the removal of undesirable particulates from cotton engaged to the fiber-engaging structure of the cylinder member, said grid assembly including a plurality of grid bars connected to the frame in a spatial relationship such that any two contiguous grid bars are separated by a grid space; and



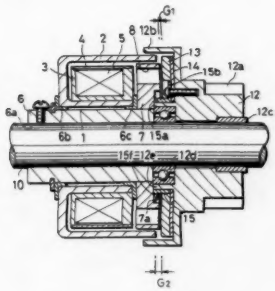
a shroud member supported by the frame for controlling the loss of cotton through the grid space between contiguous grid bars.

5,909,787

ELECTROMAGNETIC CLUTCH

Tsutomu Kubo, Osaka, Japan, assignor to Mita Industrial Co., *Ltd., Osaka-fu, Japan*

Filed May 12, 1997, Appl. No. 854,568
Claims priority, application Japan, Jun. 24, 1996, 8-163362
Int. Cl.[6] F16D *27/10*
U.S. Cl. 192—84.96 **11 Claims**



1. An electromagnetic clutch comprising:

a field member with an exciting coil member disposed therein;

a shaft extending through the field member and the exciting coil member;

a rotor member fixedly disposed on the shaft at a position opposed to the field member;

a drive mechanism rotatably received on the shaft;

a contact member provided on the drive mechanism on a side thereof facing the rotor member;

an elastic member fixedly connected to the contact member and disposed on the drive mechanism for biasing the contact member to the drive mechanism;

the contact member being positioned to form a clearance of a first dimension along the shaft between opposed surfaces of the contact member and the rotor member, the first dimension being set smaller than a limit dimension representing a distance of travel of the contact member away from the drive mechanism along an axial direction of the shaft translating into a maximum deformable amount of the elastic member, a deformation of the elastic member by movement of the contact member away from the drive mechanism an amount corresponding to the limit dimension resulting in reaching an elastic limit of the elastic member; and

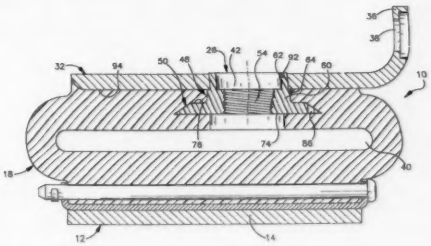
a restricting member provided on the drive mechanism for restricting a displacement of the contact member along the axial direction of the shaft a distance less than a second dimension, the second dimension being set within a range between the first dimension and the limit dimension, movement of the contact member away from the drive mechanism being restricted to the distance less than the second dimension prior to reception of the drive mechanism on the shaft, thereby preventing deformation of the elastic member beyond the elastic limit thereof by an external force applied thereto.

5,909,788

COUPLING ASSEMBLY COMPONENT

Robert A. Pearl, Brunswick; Charles M. Imler, Concord Township, both of Ohio, and Joe W. Lowry, Laurinburg, N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 20, 1998, Appl. No. 44,975
Int. Cl.[6] F16D *25/04*
U.S. Cl. 192—88 B **4 Claims**



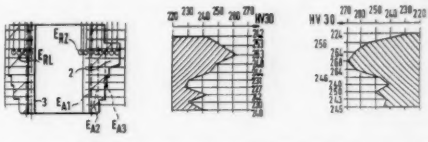
1. A coupling assembly component for use in a coupling assembly having an annular base adapted to be connected with a first element and a first annular friction surface which is coaxial with said base and is movable into engagement with a second annular friction surface connected with a second element, said coupling assembly component comprising annular fluid extensible tube means which is extensible under the influence of fluid pressure in a chamber in said tube means to move the first friction surface into engagement with the second friction surface, and fitting means embedded in said tube means for conducting fluid pressure into the chamber in said tube means, said fitting means having a main section with a passage which extends axially through said main section to enable fluid pressure to be conducted through said fitting means into the chamber in said tube means and a flange section which extends radially outward from said main section of said fitting means and is enclosed by material of said tube means to retain said fitting means in said tube means, said main section and said flange section of said fitting means being integrally formed by a single piece of polymeric material.

5,909,789

HUB BODY FOR CLUTCHES, ESPECIALLY FRICTION CLUTCHES IN MOTOR VEHICLES

Frank Ilzig, Schweinfurt; Ernst Buberl, Obbach, and Achim Link, Schweinfurt, all of Germany, assignors to Mannesmann Sachs AG, Schweinfurt, Germany

Filed Nov. 18, 1997, Appl. No. 972,556
Claims priority, application Germany, Nov. 22, 1996, 196 48 414; Jun. 7, 1997, 296 22 915 U; Jun. 14, 1997, 197 25 288
Int. Cl.[6] F16D *13/64;13/58*
U.S. Cl. 192—115 **17 Claims**



2. A hub body for a clutch, comprising: a tubular base body having an internal toothing connectable to a gear input shaft; and

an outer contour attachable to a take-along disk, the outer contour being configured to have a hardness curve that rises in the axial direction, relative to a constant axial plane, from a minimum value to a maximum value and declines again, the hardness curve declining, relative to a constant radial plane, from a maximum value on a radial inner side to a minimum value on a radial outer side.

5,909,790

CLUTCH PLATE WITH FRICTION DISK SUPPORTED BY IDLE SPRING AND HUB

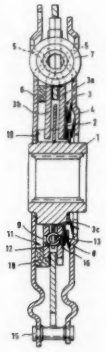
Norbert Lohaus, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Jul. 16, 1997, Appl. No. 895,190

Claims priority, application Germany, Jul. 25, 1996, 196 30 040

Int. Cl.[6] **F16D** *13/64;3/14*

U.S. Cl. 192—213.22 **6 Claims**



1. A clutch disk with a torsional vibration damper, comprising:

a hub;

a hub disk having a toothing by which the hub disk is mounted on the hub with play;

cover plates arranged coaxially at both sides of the hub disk;

a pre-damper having springs;

a friction arrangement activatable in an idling state after a partial rotation of the cover plates and the hub disk via the pre-damper, the friction arrangement including a friction ring having one side supported at the hub with rotational play and another side supported at the springs of the pre-damper, the friction ring being arranged axially outside of the pre-damper; and

first pins mounted on one side of the friction ring so as to correspond with the springs of the pre-damper and support the friction ring, the first pins being arranged so as to be uniformly spaced in a circumferential direction and project in an axial direction, the friction ring having an internal toothing by which the friction ring is supported on the hub with play.

5,909,791

SPRING CLUTCH

Carmelo Joseph Licciardi DiStefano, 6 Mercedes Drive, Thomastown, VIC 3074, Australia

PCT No. PCT/AU97/00054, § 371 Date Aug. 29, 1997, § 102(e) Date Aug. 29, 1997, PCT Pub. No. WO97/28384, PCT Pub. Date Aug. 7, 1997

PCT Filed Jan. 31, 1997, Appl. No. 894,841

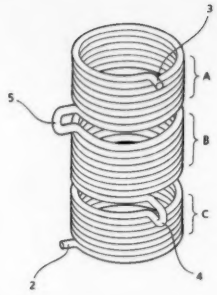
Claims priority, application Australia, Feb. 2, 1996, PN7835

Int. Cl.[6] **F16D** *41/20;43/20*

U.S. Cl. 192—223.4 **24 Claims**

1. A helical spring for a spring clutch, comprising:

at least a first right hand wound section and a second right hand wound section:



at least one left hand wound section positioned between the first and second right hand wound sections; and

tabs projecting from the first and second right hand wound sections and the left hand wound section.

24. A spring clutch comprising:

a first shaft:

a helical spring frictionally engaging the first shaft, the helical spring including

at least one right hand wound section,

at least one left hand wound section,

tabs projecting from both the right hand wound section and the left hand wound section; and

a controller adapted to cause engagement or disengagement of the helical spring to or from the first shaft, the controller including

a second shaft rotatable to loosen the helical spring on the first shaft, and

a third shaft rotatable to tighten the helical spring on the first shaft.

5,909,792

BANKNOTE READER

André Gerlier, Sciez, France; Roberto Polidoro, and Guillermo Garcia, both of Geneva, Switzerland, assignors to Mars Incorporated, McLean, Va.

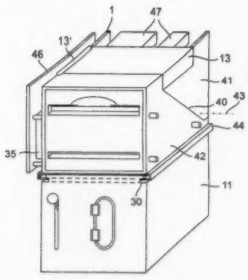
Continuation of application No. 08/551,930, Oct. 23, 1995, Pat. No. 5,662,201, which is a continuation of application No. 08/162,140, filed as application No. PCT/CH93/0019930414, Apr. 14, 1993, abandoned. This application Jul. 10, 1997, Appl. No. 891,147.

Claims priority, application Switzerland, Apr. 16, 1992, 1271/92-2

This patent is subject to a terminal disclaimer

Int. Cl.[6] **G07D** *7/00*

U.S. Cl. 194—206 **3 Claims**



1. A banknote validator for co-operating with a removable money container, the validator comprising:

a housing having a front and a rear;

a banknote aperture disposed at the front of the housing for receiving banknotes;

a coupling member for slidably receiving a removable money container to enable the money container to be removably

fitted in a money container position by sliding along a sliding axis in either a forward or rearward direction, the sliding axis being parallel with a front-rear direction of the housing;

at least one sensor in the housing for sensing a banknote for determining its acceptability;

a transfer device in the housing operable to transfer banknotes to the money container, the transfer device being disposed on an opposite side of the coupling member to the money container position so as not to block the sliding axis; and

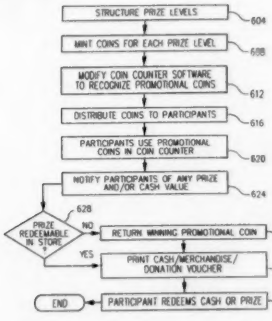
a temporary storage device in the housing for temporarily storing banknotes, the temporary storage device being located on the same side of the coupling member as the transfer device so as not to block the sliding axis, and being located towards the rear of the housing, rearwards of the transfer device.

5,909,793

COIN COUNTER PRIZE-AWARDING METHOD AND APPARATUS USING PROMOTIONAL COINS

Kirk W. Beach, and Bruce Coonan, both of Issaquah, Wash., assignors to Coinstar, Inc., Bellevue, Wash.

Filed Aug. 4, 1998, Appl. No. 128,440
Int. Cl.[6] G07F *7/02*; **G06F** *7/00*
U.S. Cl. 194—210 **54 Claims**



46. A method for using promotional coins in a promotion, comprising:

distributing a plurality of promotional coins to a plurality of participants, said plurality of promotional coins including one or more first coins and one or more second coins, wherein the one or more first coins are indistinguishable from the one or more second coins using human sight alone; and

providing a coin counter which is configured to receive, all at once, one or more promotional coins, government-minted coins and other objects wherein said coin counter distinguishes said first coins from said second coins.

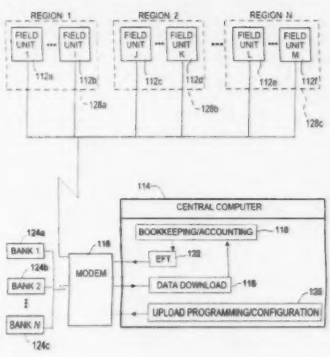
5,909,794

DONATION TRANSACTION METHOD AND APPARATUS

Jens H. Molbak, Bellevue; Carol Lewis, Seattle; Johanna Carlson, New Castle, and Michael Doran, Mukilteo, all of Wash., assignors to Coinstar, Inc., Bellevue, Wash.

Continuation-in-part of application No. 08/689,926, Aug. 12, 1996, and application No. 08/834,952, Apr. 7, 1997, Pat. No. 5,799,767, which is a continuation of application No. 08/237,486, May 3, 1994, Pat. No. 5,620,079, said application No. 08/689,926 is a continuation of application No. 08/255,539, Jun. 6, 1994, Pat. No. 5,564,546, which is a continuation of application No. 07/940,931, Sep. 4, 1992, abandoned. This application May 7, 1997, Appl. No. 852,328. This patent is subject to a terminal disclaimer
Int. Cl.[6] G07D *3/16*
U.S. Cl. 194—216 **14 Claims**

11. A method comprising the steps of:



receiving a plurality of coins of arbitrary denomination from users;

allowing the user to choose to donate to charitable organizations, in whole or in part, the value of said coins;

allowing the user to choose between different charitable organizations;

determining a total amount of said coins;

maintaining a record of the value to be donated;

maintaining a record of the charitable organization chosen;

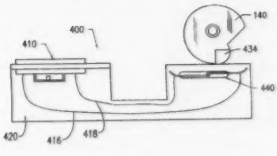
dispensing a donation receipt for the value donated to the charitable organization.

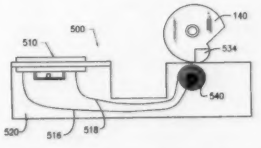
5,909,795

COMBINATION COIN MECHANISM AND COIN COUNTER FOR BULK VENDING MACHINES

Elliott Porco, Tuckahoe, and Nikolay Nikolayev, Flushing, both of N.Y., assignors to Nova Resolution Industries, Inc., Bronx, N.Y.

Continuation-in-part of application No. 08/842,677, Apr. 15, 1997. This application Apr. 24, 1998, Appl. No. 65,504.
Int. Cl.[6] G07F *11/44*
U.S. Cl. 194—243 **20 Claims**





8. For a bulk vending machine, a combination coin mechanism and coin counter, comprising:

a coin mechanism designed to be partially received into an opening in said bulk vending machine, said coin mechanism comprising a selectively rotatable cam having an eccentrically shaped portion, wherein said eccentrically shaped portion of said cam has a magnet attached thereto; and

a coin counter assembly attached to a portion of said coin mechanism within said opening of said bulk vending machine, comprising:

a bracket attached to said coin mechanism and having first and second sides, wherein said second side is proximate to said cam when said bracket is so attached to said mechanism;

a numeric display attached to said first side of said bracket; and

a reed-switch attached to said second side of said bracket and in such a position as to be in a working relationship with said magnet, when said magnet is proximate thereto because of said rotation of said cam;

wherein said numeric display advances one number when said magnet is rotated proximate to said reed-switch by said cam.

5,909,796

METHOD AND APPARATUS FOR LOADING ARTICLES ONTO VERTICALLY SPACED PLATFORMS OF A MOVING TRANSPORT DEVICE

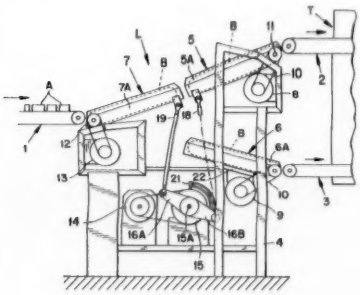
Attilio Soldavini, Ferno-Va, Italy, assignor to Sandvik AB, Sandviken, Sweden

Filed Nov. 15, 1996, Appl. No. 748,904

Claims priority, application Italy, Nov. 16, 1995, MI95A2359

Int. Cl.° B65G *47/52*

U.S. Cl. 198—369.2 **10 Claims**



1. A loading unit for loading articles selectively onto upper and lower platforms, comprising:

an introduction apron including a support and a driven endless belt mounted thereon; said introduction apron including an inlet end for receiving articles fed thereto, and a rocking discharge end for discharging the articles; said introduction apron being mounted adjacent its inlet end for pivoting about a horizontal axis to enable said rocking discharge end to move between upper and lower positions;

a lower loading apron including a support and a driven endless belt mounted thereon; said lower loading apron including an inlet end arranged adjacent said discharge end of said introduction apron when said discharge end is in said lower position, for receiving articles therefrom; said lower loading apron including a discharge end for discharging articles onto a lower platform; and

an upper loading apron including a support and a driven endless belt mounted thereon; said upper loading apron including a rocking inlet end and an outlet end for discharging articles onto an upper platform; said upper loading apron being mounted adjacent its discharge end for pivoting about a horizontal axis to enable said rocking inlet end to move between upper and lower positions; and

a rocking mechanism operably connected to said introduction apron and said upper loading apron for pivoting said introduction apron and said upper loading apron together such that when said rocking inlet end is in its lower position, said rocking discharge end is disposed in its upper position and adjacent said rocking inlet end for delivering articles thereto, said rocking mechanism comprising a motor, a shaft oscillated by said motor, first and second arms fixed to said shaft, each arm having a free end, and first and second rods, said first rod connected between said rocking discharge end and said free end of said first arm, said second rod connected between said rocking inlet end and said free end of said second arm.

5,909,797

CONVEYOR WITH ENDLESS CONVEYOR ELEMENT HAVING INTERCONNECTED CARRIERS

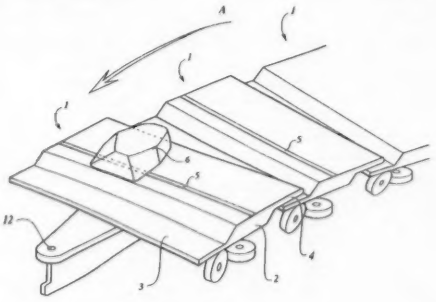
Jacobus M. Van Den Goor, Nuenen, Netherlands, assignor to Vanderlande Industries Nederland B.V., Veghel, Netherlands

Filed Jan. 3, 1997, Appl. No. 778,819

Claims priority, application Netherlands, Jan. 8, 1996, 1002039

Int. Cl.° B65G *47/34;35/06;17/06*

U.S. Cl. 198—370.02 **9 Claims**



1. A conveyor, which comprises:

a frame;

an endless conveying element which is movable in a longitudinal direction by a drive member during operation;

guide rails connected to the frame;

a plurality of interconnected carriers, said carriers each having a pusher shoe mounted thereon so as to be movable with said carriers, wherein said carriers are pivotable with respect to one another by a pivot defining an upwardly extending pivot axis;

first guide wheels coupled to said carriers and guiding said carriers, which during operation roll on said guide rails, wherein said carriers are, near end portions thereof, provided with second guide wheels which are rotatable about axes of rotation extending parallel to said pivot axis, wherein an upwardly extending pivot axis, about which a first carrier is pivotable with respect to an adjacent carrier, lies at least substantially in a single plane with the axes of rotation extending parallel to said upwardly extending pivot axis of said second guide wheels provided on said adjacent carrier wherein adjacent carriers are provided with overlapping plate-shaped parts and wherein said pivot member coupling two adjacent carriers with each other is arranged between a lower side of one carrier and a part of another carrier extending below said one carrier.

5,909,798

UNIT PRODUCT LOADING AND DISCHARGE SYSTEM

Robert L. Shaver, Brighton; Alfred J. Kafka, Wixom, and Matthew C. Carey, Holt, all of Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

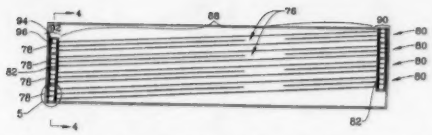
Provisional application No. 60/009,943, Jan. 16, 1996. This application Jan. 10, 1997, Appl. No. 781,808.

Int. Cl.° B65G *37/00*

U.S. Cl. 198—603 **18 Claims**

1. A storage apparatus for storing and dispensing a plurality of loose copy units comprising:

a) a plurality of columns of discrete linear conveyors, each conveyor in each column having a first run and a second run,



the conveyors in each column being stacked vertically so that a first run of one conveyor faces a second run of a vertically adjacent conveyor, and a cross over conveyor linking each column with an adjacent column, each cross over conveyor having oppositely tapered rollers at opposing ends thereof;

b) a frame supporting the plurality of columns of discrete linear conveyors;

c) a diverter arranged at an exit of each conveyor to direct the loose copy units exiting one conveyor to an entrance of a vertically adjacent conveyor for travel in an opposite direction;

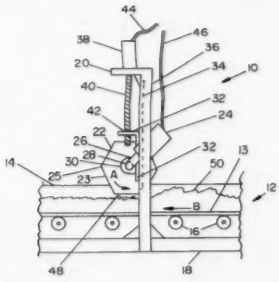
d) whereby adjacent vertically stacked conveyors so that the second run of one conveyor and the first run of an adjacent conveyor bias the loose copy therebetween.

5,909,799

SELF CLEARING CONVEYOR

D. Leonard Stairs, Manheim, and Lam T. Nguyen, Lancaster, both of Pa., assignors to Aggregates Equipment, Inc., Leola, Pa.

Filed Mar. 10, 1998, Appl. No. 38,181
Int. Cl.[6] B65G *37/00*
U.S. Cl. 198—622 **6 Claims**



1. A self clearing conveyor comprising:

a base structure;

a linear moving surface upon which material can be placed, the linear moving surface moving in a first direction and supported upon the base structure;

a drum with at least three faces, supported above the linear moving surface, with the drum axis oriented transverse to the linear moving surface and the drum rotating in a manner such that the drum surfaces nearest to the linear moving surface move in a direction opposite to the first direction; and

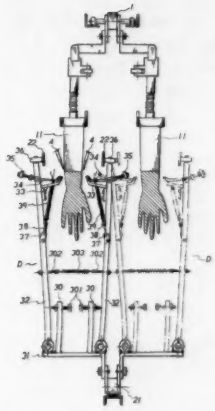
means for rotating the drum.

5,909,800

FILM ARTICLE RELEASE MACHINE

Tsai-Hsiu Huang, 58, Ma Yuan West St., Taichung, Taiwan

Filed Nov. 13, 1997, Appl. No. 969,733
Int. Cl.[6] B65G *17/18*
U.S. Cl. 198—803.4 **3 Claims**



1. A film article release machine comprises:

two drive wheels,

a conveyer chain surrounding the drive wheels and driven by the drive wheels,

a plurality of release devices disposed on the conveyer chain,

four parallel guide plate disposed above the conveyer chain,

each of the release devices having a positioning seat connected to the conveyer chain,

a first and a second distal sleeves disposed on the positioning seat,

a third and a fourth distal sleeves disposed on the positioning seat,

a first and a second middle sleeves disposed on the positioning seat,

the first middle sleeve disposed between the first and the second distal sleeves,

the second middle sleeve disposed between the third and the fourth distal sleeves,

a first swivel arm disposed on the first middle sleeve,

a second swivel arm disposed on the second middle sleeve,

a first support post disposed on the positioning seat,

a first adjustment bolt passing through the first support post and abutting against the first swivel arm,

a second adjustment bolt passing through the second support post and abutting against the second swivel arm,

a first adjustment screw disposed on the first swivel arm,

a second adjustment screw disposed on the second swivel arm,

a compression spring disposed between the first adjustment screw and the second adjustment screw,

a first upper clip and a first lower clip disposed on an upper portion of the first swivel arm,

a first guide wheel connected to the first upper clip,

a second upper clip and a second lower clip disposed on an upper portion of the second swivel arm,

a second guide wheel connected to the second upper clip,

a first pivot seat disposed on a middle portion of the first swivel arm,

a first adjustment stud disposed on the first pivot seat,

a first coiled spring disposed between the first upper clip and the first pivot seat,

a second pivot seat disposed on a middle portion of the second swivel arm,

a second adjustment stud disposed on the second pivot seat,

a second coiled spring disposed between the second upper clip and the second pivot seat,

a first guide roller disposed on an upper end of the first swivel arm,

a second guide roller disposed on an upper end of the second swivel arm, and

the first guide roller and the second guide roller sliding between two of the corresponding guide plates.

5,909,801

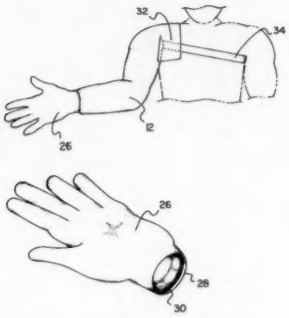
ARM WARMING SLEEVE

Howard B. Coffman, P.O. Box 753, Brave, Pa. 15316-0753

Filed Mar. 5, 1998, Appl. No. 36,418

Int. Cl.[6] A41D *13/08*

U.S. Cl. 2—16 **3 Claims**



1. An arm warming sleeve for keeping an athlete's arm warm when they are out of the action comprising, in combination:

a cylindrical sleeve having open upper and lower ends, the cylindrical sleeve being dimensioned for receiving a throwing arm of a wearer, the cylindrical sleeve having an inner fleece layer, an intermediate plastic layer, and an outer fleece layer, the open lower end having hook and loop fasteners disposed around an outer periphery thereof;

a glove portion dimensioned for being worn on a hand of the wearer, the glove portion having an opening for receiving the hand therethrough, the opening having hook and loop fasteners disposed on an interior periphery thereof for engaging the hook and loop fasteners of the open lower end of the cylindrical sleeve;

a shoulder flap secured to the open upper end of the cylindrical sleeve, the shoulder flap being dimensioned for covering a front and rear of the wearers shoulder; and

an elastic strap having opposed ends secured to opposed edges of the open upper end of the cylindrical sleeve for looping under an underarm area of an opposed arm of the wearer.

5,909,802

VEST BACKPACK

Albert Anthony Puco, and Carylann Allegra Acito Puco, both of Cherry Valley, N.Y., assignors to Albert A. Puco, Cherry Valley, N.Y.

Filed Jul. 8, 1997, Appl. No. 889,493

Int. Cl.[6] A41D *1/04*

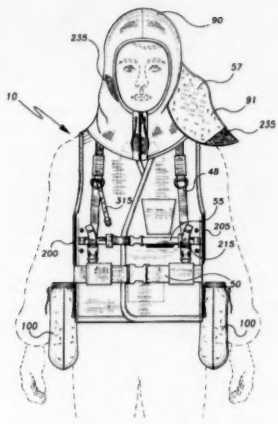
U.S. Cl. 2—102 **20 Claims**

1. A vest backpack combination, comprising:

a vest portion having a back panel integral with a right front panel and a left front panel, said back panel having an outer surface, an upper end, a right side and a left side, said front right panel having an upper end, a right side and a left side, and said front left panel having an upper end, a left side and a right side, said upper end of said back panel being connected to said upper end of said front right panel and said upper end of said left front panel;

first fastening means for fastening said right side of said back panel to said front right panel to define a shoulder opening;

second fastening means for fastening said left side of said back panel to said front left panel to define a shoulder opening;



a load equalization member connected to said vest portion; and

a first pack releasably connected to said back panel and said load equalization member.

5,909,803

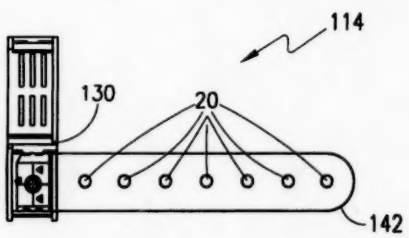
REPAIR KIT FOR ADJUSTABLE HEADGEAR

Robert Burton Clark, Austin, Tex., assignor to Eonic Creations, Inc., Austin, Tex.

Filed Feb. 20, 1997, Appl. No. 804,135

Int. Cl.[6] A42B *1/22*

U.S. Cl. 2—195.2 **15 Claims**



14. A replacement kit, for replacing an existing headgear element of an adjustable size headgear, the replacement kit comprising:

at least one replacement element and means for securely engaging the replacement element to an existing headgear element, wherein the means for securely engaging comprises an adhesive means.

5,909,804

DEPRESSION ACTIVATED SWITCH

Junichi Kuratani, Miyagi-ken, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Aug. 18, 1997, Appl. No. 917,791

Claims priority, application Japan, Aug. 29, 1996, 8-228388

Int. Cl.[6] H01H *13/70*

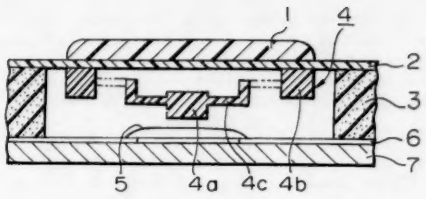
U.S. Cl. 200—516 **6 Claims**

1. A depression actuated switch comprising:

a holder which is elastically deformable during operation;

a driving member comprising:

a mounting portion fixed to said holder and displaced by said holder during operation from a first position to a second position;



an elastic portion connected to said mounting portion and elastically deformable during operation; and

a depressing portion connected to said elastic portion and displaced by said elastic portion during operation;

a click spring arranged below said depressing portion, wherein said click spring is flipped over before a displacement of said mounting portion reaches said second position and generates a tactile click feel when flipping over; and

a switch arranged below said click spring and producing an electrical conduction between contact points by said flipped over click spring;

wherein said depressing portion and said mounting portion are partially connected together to thereby form said elastic portion.

5,909,805

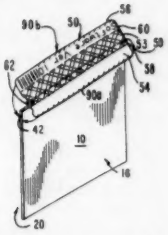
LABEL ASSEMBLY FOR PACKAGE SLEEVE ACCOMMODATING A STORAGE MEDIA DISC AND METHOD FOR SEALING A PACKAGE SLEEVE

Phillip K. Neely, Terre Haute, Ind., assignor to Sony Corporation, Tokyo, Japan, and Digital Audio Disc Corporation, Terre Haute, Ind.

Continuation-in-part of application No. 08/729,773, Oct. 8, 1996, Pat. No. 5,722,538, which is a continuation of application No. 08/407,717, Mar. 21, 1995, abandoned, which is a continuation-in-part of application No. 08/261,681, Jun. 17, 1994, abandoned. This application Dec. 23, 1997, Appl. No. 996,494.

Int. Cl.[6] **B65D** *85/57*

U.S. Cl. 206—308.1 **47 Claims**



1. A label assembly for a package sleeve including a sleeve cavity accommodating a storage media disc; said label assembly including a removable tear strip assembly having a pair of removable tear strips with one of said tear strips covering the sleeve cavity such that when detached, the disc can be removed from the sleeve cavity, said tear strips having a deadened adhesive backing so that no adhesive can contact the disc.

17. A package sleeve/label assembly comprising:

a package sleeve including a sleeve cavity for accommodating a storage media disc therein and having a front portion and a back portion;

a label assembly including a removable tear strip assembly having a pair of removable tear strips with one of said tear strips covering the sleeve cavity such that when detached, the disc can be removed from the sleeve cavity, said tear strips having a deadened adhesive backing so that no adhesive can contact the disc; said label assembly further including a first information section and a second information section each being detachably joined to one of said pair of tear strips and each having a free end; and wherein each said first and second information sections have an adhesive backing such that said label assembly can be adhesively attached to said package sleeve; said first information section including mailing identification means for identifying mailing information regarding the package sleeve and said second information section including disc identification means for providing product identification information regarding the storage media disc accommodated within the package sleeve.

32. A combination storage media disc container/seal identification assembly comprising:

a package sleeve for accommodating a storage media disc therein comprising a front panel and back panel connected thereto, and two side flap portions connected to said front panel, said front panel comprises a first folded-over double panel and said back panel comprises a second folded-over double panel and said side flap portions are adhesively attached to said back panel to form a sleeve cavity between said first and second folded-over double panels for containment of the storage media disc therein;

a label assembly including a removable tear strip assembly having a pair of removable tear strips with one of the tear strips covering the sleeve cavity such that when detached, the disc can be removed from the sleeve cavity, said tear strips having a deadened adhesive backing so that no adhesive can contact the disc; said label assembly further including a first information section and a second information section each being detachably joined to one of said pair of tear strips and each having a free end and wherein each said first and second information sections have an adhesive backing such that said label assembly can be adhesively attached to said package sleeve; said first information section including mailing identification means for identifying mailing information regarding the package sleeve and said second information section including disc identification means for providing product identification information regarding the storage media disc accommodated within the package sleeve.

47. A method for sealing a package sleeve having a front portion and a rear portion and which accommodates information media within a sleeve cavity provided between the front and rear portions and for removing the information media from the sleeve cavity, said method comprising the steps of adhesively attaching first and second information sections of a label assembly to the respective front and back portions of the package sleeve such that a removable tear strip assembly of the label assembly seals the sleeve cavity of the package sleeve, wherein said first information section includes mailing identification information for the package sleeve and said second information section includes disc identification information regarding the information media contained within the package sleeve, and wherein said removable tear strip assembly includes first and second tear strips with said first tear strip being detachably joined to said first information section and said second tear strip along respective first and second perforation lines and said second tear strip is detachably joined to said second information second along a third perforation strip;

removing said first tear strip from said label assembly by lifting and pulling a pull tab of said first tear strip to separate said first tear strip from said first information section and second tear strip along said first and second perforation lines to thereby expose a free end of said second tear strip; and

removing said second tear strip from said second information section along said third perforation line to permit removal of the information media through the opening of the sleeve cavity and permit continued adhesive attachment of only said first and second information sections of the label assembly respectively to the front and back portions of the package sleeve.

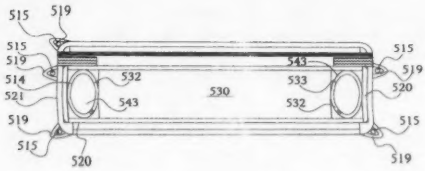
5,909,806
LAPTOP CARRYING CASE

Harold Fischel, 7 Soundview Dr., and Anthony H. Handal, 3 Blue Chip Ln., both of Westport, Conn. 06880

Continuation-in-part of application No. 08/556,720, Nov. 13, 1995, abandoned. This application Oct. 7, 1996, Appl. No. 731,190.

Int. Cl.[6] B65D *85/30*; **A45C** *3/02*

U.S. Cl. 206—320 **14 Claims**



1. A computer case having a bottom and a pair of sides comprising a flexible outer shell and a shock absorbing member, said shock absorbing member comprising a bladder, the inside of said bladder being in communication with the outside atmosphere through at least one opening dimensioned to discharge an amount of air sufficient to result in substantial but not complete deflation of said bladder in response to a mechanical force applied to said bladder when said computer case is dropped, said computer case further comprising relatively stiff members extending along said pair of sides and said bottom of said case, said relatively stiff member being formed by a pair of substantially rigid elongated members with a stiff plastic member disposed between them, said shock absorbing member being disposed between a computer contained within said case and said relatively stiff member.

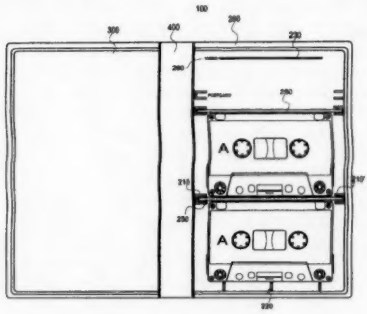
5,909,807
MULTI-PURPOSE VIDEO CASSETTE CASE

Eugene Oak, 3550 Wilshire Blvd., Suite 1410, Los Angeles, Calif. 90010

Filed May 11, 1998, Appl. No. 75,891

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—387.13 **8 Claims**



1. A cassette case for a single video cassette of the type including a case defining an interior space dimensioned to snugly receive a video cassette and a lid hingedly secured to said case for movement between an open position wherein said lid exposes said interior space of said case to accommodate insertion and removal of a video cassette, and a closed position wherein said lid overlies said case for enclosing said interior space, the improvement comprising a plurality of partitioning members and means for securing said plurality of partitioning members within said case, said partitioning members when employed effectively dividing said interior space into a plurality of smaller interior spaces.

5,909,808
CONTAINER FOR HORIZONTALLY STACKED SHEETS

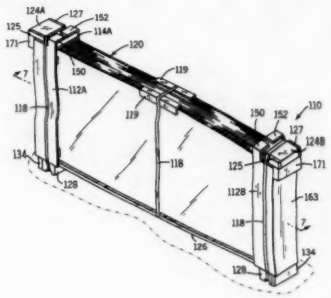
David M. Bartholomew, Greensburg, Pa., assignor to Menasha Corporation, Neenah, Wis.

Continuation-in-part of application No. 08/627,784, Mar. 27, 1996, Pat. No. 5,682,997. This application Nov. 3, 1997, Appl. No. 962,823.

This patent is subject to a terminal disclaimer

Int. Cl.[6] B65D *85/48*

U.S. Cl. 206—451 **18 Claims**



1. A container for storing and shipping sheets vertically oriented on edge in a horizontal stack, said stack having a forward facing surface, a rearward facing surface, and perimetral edge surfaces between said forward and rearward facing surfaces, said container comprising:

a baseboard beneath a lower edge surface of said stack spanning the length of said lower edge surface and being of a width approximately equal to the width of said lower edge surface;

at least one cap board above an upper edge of said stack of a width approximately equal to the width of said baseboard;

a front cover having a front panel substantially parallel with and overlying at least a portion of said forward facing surface of said stack;

a rear cover having a rear panel substantially parallel with and overlying, at least a portion of said rearwardly facing surface of said stack;

a side panel extending between and fixed to said front cover and rear cover; and vertical banding around said container encompassing said baseboard and said cap board with said stack between said baseboard and cap board;

wherein said cap board has an extending portion which extends beyond said side panel so that said banding suspends said baseboard and stack supported thereon when said cap board is lifted by a sling hooked under said extending portion.

16. A container for storing and shipping sheets vertically oriented on edge in a horizontal stack, said stack having a forward facing surface, a rearward facing surface, and perimetral edge surfaces between said forward and rearward facing surfaces, said container comprising:

a baseboard beneath a lower edge surface of said stack spanning the length of said lower edge surface and being of a width approximately equal to the width of said lower edge surface; and

two identical end cap units spaced apart and at opposite ends of said stack, each said end cap unit including:

a three sided folded paperboard cover wrapped around an adjacent end of said stack, said sides including a front panel, a rear panel and a side panel connecting said front and rear panels; and

a cap board above an upper edge of said stack of a width approximately equal to the width of an upper edge of said stack, said cap board being secured to said cover; and

vertical banding around said end cap units, said banding encompassing said cap board and said base board with said stack between said cap board and said baseboard.

5,909,809

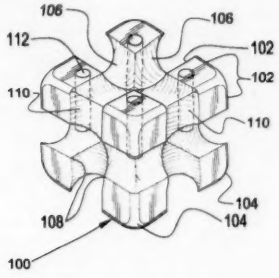
ELASTIC BAND HOLDER

Larry A. Franklin, Pensacola, Fla., assignor to Merit, Inc., Pensacola, Fla.

Continuation of application No. 08/660,240, Jun. 7, 1996, abandoned. This application Oct. 22, 1997, Appl. No. 958,000.

Int. Cl.[6] B65D 85/00

U.S. Cl. 206—525 6 Claims



1. An elastic band holder, comprising:

a generally cubic-shaped body having at least one receptacle disposed within said body and a magnet encompassing the periphery of one of the at least one receptacle; and

at least one generally concave slotted portion within said body having rounded internal edges encompassing an intermediate portion of said body.

5,909,810

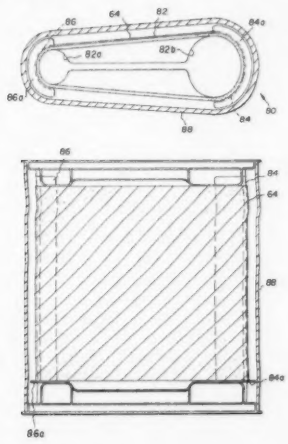
APPARATUS FOR PACKAGING AND INSTALLATION OF A FUSING BELT

Muhammed Aslam, Rochester, and Socrates Hryhorenko, Sodus, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1997, Appl. No. 992,745

Int. Cl.[6] B65D 69/00

U.S. Cl. 206—576 3 Claims



1. Packaging for a fusing belt of a belt fusing apparatus for providing image gloss to a colorant image, said belt fusing apparatus including a fuser assembly having a fuser roller and a steering roller about which said fusing belt is adapted to be entrained for movement about a closed loop path defined by said fusing roller and said steering roller, said packaging comprising:

a protective shell; and

a support within said protective shell, said support including a core having an external surface shape substantially corresponding to the defined closed loop path so as to securely support a fusing belt thereon, and a guide, receivable between said core and a fusing belt supported thereon, having a tab for facilitating removal of a fusing belt from said core by movement of said guide member tab relative to said core, whereby said support secures at least a fusing belt and prevent damage thereto during shipping and handling and enables ready removal therefrom.

5,909,811

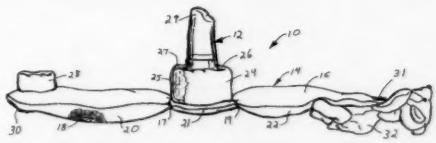
HOLDER FOR A BOTTLE OF A COSMETIC

Carlene B. Harris, 1048 Shaffer Trail, Oviedo, Fla. 32765

Filed Nov. 3, 1997, Appl. No. 962,621

Int. Cl.[6] B65D 69/00; A47G 23/02

U.S. Cl. 206—581 16 Claims



1. An article for holding a bottle containing a cosmetic, said article comprising:

a base portion including an elongated flexible sack which is divided into first and second end sections with a midsection therebetween, and the base portion further including weights inside the first and second end sections;

a container attached to the midsection of the elongated flexible sack for removably receiving the bottle containing the cosmetic; and

a retainer attached to the first end section of the base portion for removably receiving the bottle containing the cosmetic.

10. An article for holding a bottle of nail polish, said article comprising:

a base portion including an elongated flexible sack containing particles, and having first and second end sections;

a container attached to the base portion for removably receiving the bottle of nail polish;

a fastener for attaching the first end section to the second end section;

a retainer attached to the first end section of the base portion for removably receiving the bottle containing the cosmetic; and

wherein the article has a storage position in which the base portion is wrapped around the bottle of nail polish with the fastener securing the first and second end sections together, and a usage position in which the first and second end sections of the base portion are detached from each other extending downwardly from the container.

5,909,812

CONTAINER FOR STORING AND TRANSPORTING LEADFRAMES

Normand Thibaudeau, North Providence, R.I., assignor to Plastic Development, Inc., Pawtucket, R.I.

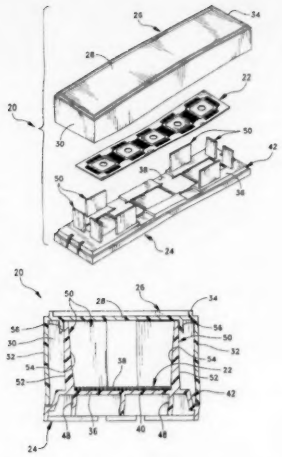
Continuation-in-part of application No. 08/727,115, Oct. 8, 1996, abandoned. This application Oct. 29, 1997, Appl. No. 958,552.

Int. Cl.[6] B65D 85/00

U.S. Cl. 206—723 16 Claims

1. A container for storing and transporting articles, said container comprising:

a base including a planar wall having an upwardly facing surface defined by a peripheral edge, and at least two upwardly extending, opposite posts secured to the upper surface of the



planar wall, said posts being spaced interiorly from the peripheral edge of the upwardly facing surface, each post having an outwardly facing surface and an inwardly facing surface formed such that each post is tapered from the bottom of the post to the top of the post, the articles being positioned between the inwardly facing surfaces of the posts; and

a cover releasably securable to said planar wall of the base, said cover including a top wall and a peripheral, downwardly extending wall formed to the outer periphery of the top wall, said peripheral wall being positioned adjacent the peripheral edge of the upwardly facing surface of the base and outwardly with respect to said posts of the base when securing the cover to the base.

5,909,813

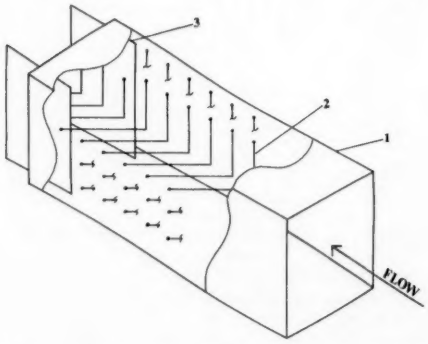
FORCE FIELD SEPARATOR

Ceil Stelzer, Philadelphia, Pa., assignor to Lift Feeder Inc., Yardley, Pa.

Filed Jan. 13, 1997, Appl. No. 782,126

Int. Cl.[6] B03C *7/00*

U.S. Cl. 209—128 **14 Claims**



1. A force field separator for separating select materials of a fluid stream out of a main stream, which uses the combination of a force propelling a fluid stream through an elongate outer housing and field forces produced by parallel rods or wires to move select materials in said fluid stream which are influenced by said field forces, across said fluid stream in a general direction parallel to the rods, the separator comprising:

an elongate outer housing, having outer side walls, to contain said fluid stream containing said select materials which are influenced by said field forces,

means to propel said fluid stream axially through said elongate outer housing,

means to separate said fluid stream into separate plenum flows having higher concentration of said select materials along the length of said elongate outer housing, through multiple openings in said outer side walls of said elongate outer housing,

a plurality of small cross sectional area parallel rods originating and terminating near opposite side walls of said elongate outer housing, oriented at an angle between parallel and perpendicular to the direction of said force propelling said fluid stream through the separator, said rods producing said field forces between adjacent said rods, whereby said field forces are perpendicular to said rods,

and means for creating said field forces between said rods which produce field gradients between said rods.

5,909,814

PAPER CURRENCY RECEIVING AND DISPENSING MACHINE

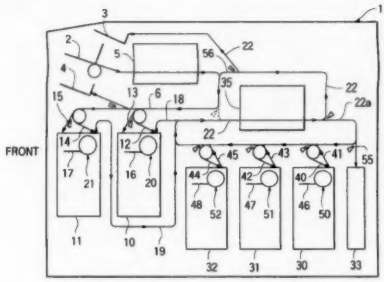
Junichi Arikawa, Kawaguchi, Japan, assignor to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1997, Appl. No. 928,695

Claims priority, application Japan, Sep. 18, 1996, 8-246654; Sep. 10, 1997, 9-245440

Int. Cl.[6] B07C *5/00;5/34*

U.S. Cl. 209—534 **10 Claims**



1. An apparatus for receiving and dispensing bills of plural denominations comprising:

a bill receiving opening in which the bills are deposited;

at least two temporary storing boxes for the bills each of which is adapted to temporarily store the bills of plural denominations which are deposited in the bill receiving opening and to discharge the stored bills therefrom;

a plurality of bill storing boxes adapted to store the bills discharged from the temporary storing boxes and to discharge the stored bills therefrom, each of the plurality of bill storing boxes being adapted to store a respective one of the plural denominations of bills;

a first transport passage, operatively communicating the bill receiving opening with the at least two temporary storing boxes, the first transport passage including first transport means for moving the bills between the bill receiving opening and the temporary storing boxes;

a second transport passage, operatively communicating the at least two temporary storing boxes with the bill storing boxes, the second transport passage including second transport means for moving the bills between the at least two temporary

storing boxes and the bill storing boxes, the second transport passage being independently disposed from the first transport passage; and

a first bill discrimination means operatively positioned relative to the second transport passage for discriminating the plural denominations of the bills discharged from the at least two temporary storing boxes, comprising a second transport passage selective delivery means for sorting said plural denominations into each of said plurality of bill storing boxes independent of activity of said first transport passage.

5,909,815

SINGLE DRIVE, MULTI-SCREW SORTER WITH *PUSHER MEANS*

Heizaburo Kato, Ogasa-gun, and Osamu Kojima, Fujioka, both of Japan, assignors to Sankyo Manufacturing Co., Ltd., and Eisai Co., Ltd., both of Tokyo, Japan

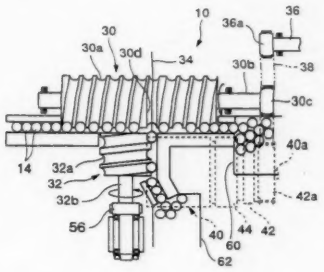
PCT No. PCT/JP97/01500, § 371 Date Dec. 12, 1997, § 102(e) Date Dec. 12, 1997, PCT Pub. No. WO97/41974, PCT Pub. Date Nov. 13, 1997

PCT Filed May 1, 1997, Appl. No. 973,999

Claims priority, application Japan, May 2, 1996, 8-111758

Int. Cl.[6] B07C *9/00*; **B07B** *13/05*

U.S. Cl. 209—653 **18 Claims**



1. A sorter comprising:

a drive shaft;

a main screw which is rotated continuously by said drive shaft to arrange in order and convey products to be sorted, said main screw having helical grooves for engagement with the products to be sorted;

an annular groove portion for stopping therein each of the to-be-sorted products being conveyed, said annular groove portion being formed between said helical grooves of said main screw in series with the helical grooves;

a rotatable sub-screw located near said main screw at the position of said annular groove portion, said sub-screw being formed with helical grooves for engagement with the products to be sorted to arrange in order and convey the products;

a delivery means disposed at a position of said annular groove portion to deliver the products to be sorted from said main screw to said sub-screw; and

an interlocking mechanism to which is inputted the rotation of said drive shaft and which synchronizes the delivery motion of said delivery means with the rotation of said sub-screw.

5,909,816

ADJUSTABLE VEHICLE-CARRYING FRAME

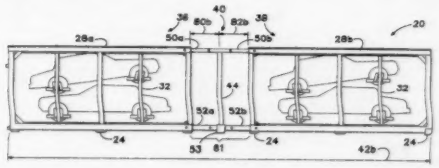
Peter Gearin, Portland, and Everett A. Leech, Oregon City, both of Oreg., assignors to G & G Intellectual Properties, Inc., Portland, Oreg.

Continuation of application No. 08/837,054, Apr. 11, 1997, Pat. No. 5,765,701, which is a continuation of application No. 08/686,685, Jul. 26, 1996, Pat. No. 5,630,515, which is a continuation of application No. 08/520,747, Aug. 28, 1995, Pat. No. 5,553,716, which is a continuation of application No. 08/433,629, May 3, 1995, Pat. No. 5,470,490, which is a continuation of application No. 07/871,283, Apr. 20, 1992, Pat. No. 5,417,332, which is a continuation-in-part of application No. 07/720,893, Jun. 25, 1991, Pat. No. 5,105,951, which is a continuation of application No. 07/500,476, Mar. 28, 1990, Pat. No. 5,040,938, which is a continuation of application No. 07/261,504, Oct. 24, 1988, Pat. No. 4,963,067, which is a continuation-in-part of application No. 06/943,688, Dec. 18, 1986, Pat. No. 4,797,049. This application Mar. 13, 1998, Appl. No. 42,268.

This patent is subject to a terminal disclaimer

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—85.8 **12 Claims**



1. A system for loading and transporting wheeled vehicles comprising:

(a) an elongate three-dimensional cargo-carrying enclosure having a closable opening;

(b) an elongate three-dimensional frame having a frame base and respective ends and respective vehicle supports capable of supporting at least a first vehicle longitudinally upon said frame in an elevated condition and at least a second vehicle longitudinally upon said frame at least partially beneath said first vehicle so that said first vehicle and said second vehicle are at respective different elevations, said frame being matingly insertable longitudinally into said enclosure through said opening while said first and second vehicles are supported upon said frame at said respective different elevations by said vehicle supports;

(c) at least one of said vehicle supports being more elevated adjacent to one of said ends than adjacent to the other of said ends of said frame so as to tilt said first vehicle longitudinally to minimize the height of said first vehicle in said elevated condition; and

(d) wheels rotatably mounted to said frame base and adapted to facilitate the movement of said frame into said cargo-carrying enclosure.

5,909,817

METHOD AND APPARATUS FOR CONTROLLING AND OPERATING A CONTAINER CRANE OR OTHER SIMILAR CRANES

Walter J. Wallace, Jr., Alameda, and Mark A. Wallace, Hayward, both of Calif., assignors to Geotech Crane Controls, Inc., Alameda, Calif.

Division of application No. 08/542,074, Oct. 12, 1995, Pat. No. 5,713,477. This application Oct. 30, 1997, Appl. No. 960,643.

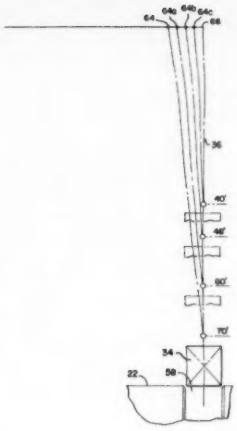
Int. Cl.[6] B66C *13/06*

U.S. Cl. 212—275 **12 Claims**

1. Apparatus for controlling the operation of a container crane having a generally horizontal boom with at least one rail thereon,

a trolley moveable along the rail in opposite directions,

hoisting means suspended from the trolley,



and load carrying means suspended from the hoisting means for selectively grasping and releasing a load,

said apparatus comprising trolley drive control means for causing outward movement of the trolley along the boom,

said trolley drive control means comprising stopping means for causing momentary stopping of the trolley at a first stopping position followed by restarting of the trolley in an outward direction,

said stopping means subsequently stopping the trolley for a second time at a second stopping position located directly above a transfer position where the load is to be loaded into a container conveyance vehicle and then released from the load carrying means,

the stopping of the trolley at the stopping position being operative to cause the load to swing forwardly to initiate the first quarter of a pendulum swinging cycle,

means for controlling the location of the first stopping position so that the distance between the first and second stopping positions corresponds with the horizontal component of the swinging movement of the load during the first quarter of the pendulum swinging cycle,

and means for propelling the trolley between said first and second positions at a rate such that the trolley catches up with the load at the second stopping position of the trolley,

whereby the load is completely stopped at the transfer position without any residual swinging movement.

5,909,818

WATER TANK ADAPTER

Roy E. Bateman, R.D. 1 Box 431, Cogan Station, Pa. 17728

Filed Nov. 14, 1997, Appl. No. 971,174

Int. Cl.[6] B65D *45/00*

U.S. Cl. 220—601 **8 Claims**

1. A water tank adapter to allow cleaning and service of a water tank, comprising:

an inlet plate having an opening;

an outer gasket to act as a seal between said inlet plate and said water tank;

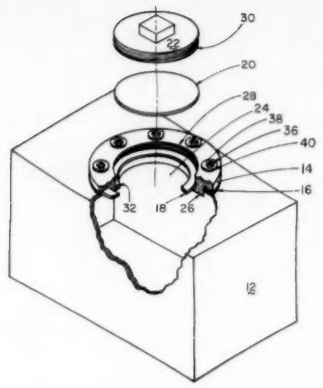
a plug for closing said opening;

a side wall extending from said inlet plate;

threads along said side wall and threads on said plug which interact to secure said plug to said inlet plate;

a ridge below said threads which extends from said side wall inward toward the opening;

an inner gasket along said ridge; and



a solid disk shaped seal plate which is seated between said inner gasket and said plug.

5,909,819

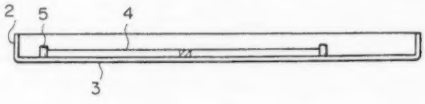
BOX-SHAPED PLASTIC HOUSING OF INTEGRALLY MOLDED RESIN

Katsura Adachi, Sagamihara; Makoto Usui, Yokohama; Kota Nishii, Isehara; Takashi Muraya, Kawasaki; Toshihiro Kobayashi, Machida; Kazuyuki Tamura, Mishima, and Junichi Sato, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, and Fujitsu Kasei Limited, Yokohama, both of Japan

Division of application No. 07/775,561, Oct. 15, 1991, Pat. No. 5,254,304. This application Jul. 9, 1993, Appl. No. 88,335. Claims priority, application Japan, Oct. 15, 1990, 2-2739190

Int. Cl.[6] B65D *90/04*

U.S. Cl. 220—623 **9 Claims**



1. A box-shaped plastic housing comprising:

a substantially planar bottom wall having a peripheral edge, an upright wall integrally joined at a bottom edge thereof to, and extending upwardly from, said peripheral edge of said bottom wall, said bottom wall and said upright wall cooperatively defining an integral, box-shaped molded structure, and said bottom wall having a thickness in the range of from two-thirds to one-third the thickness of said upright wall; and

said bottom wall and said upright wall having respective inner surfaces cooperatively defining the inside surface of said box-shaped structure, and said bottom wall further comprises at least one rib structure formed integrally on said inner surface thereof, each rib structure extending along a respective direction relative to said inner surface and associated peripheral edge of said bottom wall.

5,909,820

BEVERAGE CONTAINER WITH GROOVED LID

Frank Yeh, 1019 N. Mayflower St., Anaheim, Calif. 92801

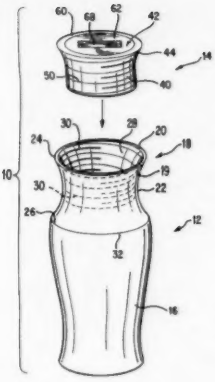
Filed Dec. 2, 1997, Appl. No. 982,833

Int. Cl.[6] A47G *19/22*

U.S. Cl. 220—711 **13 Claims**

1. An assembly, comprising:

a. a beverage container including:



a body defining a hollow interior for holding liquids and having a top rim;

a curved, annular wall attached to the top rim, the curved annular wall having a central portion and an upper end that defines a drinking mouth, with the inner diameter of the curved annular wall being greater at the upper end than at the central portion; and

b. a lid including:

a core having an annular outer wall which has a generally curved configuration, the core further including a top end, a bottom end, and at least one groove provided along the annular outer wall and extending from the top end to the bottom end; and

a top plate attached to the top end of the core and completely covering the groove, the top plate having an outer circumferential edge;

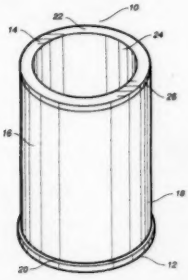
wherein the top plate of the lid is positioned inside the curved annular wall and below the upper end thereof when the lid is engaged with the curved annular wall in a drinking position to allow fluid to flow from the hollow interior of the body.

5,909,821

BEVERAGE CONTAINER INSULATOR APPARATUS

Jose Javier Silva Guridi, Houston, Tex., assignor to Free-Zee, Inc., Houston, Tex.

Filed Nov. 3, 1997, Appl. No. 963,670
Int. Cl.[6] B65D *81/00*
U.S. Cl. 220—739 **16 Claims**



1. A beverage container insulator apparatus comprising:

a base member having a generally flat surface forming a base of the insulator apparatus and an upwardly extending inner ring member;

a receptacle member having a generally tubular interior, said receptacle member having means thereon for affixing to said base member said inner ring member having a connector receiving said means for affixing, said connector comprising a lip extending around an outer surface of said inner ring member adjacent a top edge of said inner ring member, said means for affixing comprising a ledge extending inwardly from a bottom of said tubular interior of said receptacle member, said lip engaging said ledge so as to retain said base member on a bottom of said receptacle member; and

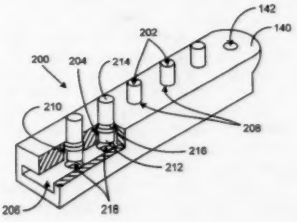
a foam member extending around an exterior surface of said receptacle member.

5,909,822

PILL DISPENSER EMPLOYING A SEALED PILL CARRIER

Donald C. George, 4621 Via Gennita, Santa Barbara, Calif. 93111, and Dean T. Upton, 2330 Las Canoas Rd., Santa Barbara, Calif. 93105

Filed May 3, 1997, Appl. No. 850,578
Int. Cl.[6] G07F *11/66*
U.S. Cl. 221—25 **51 Claims**



51. A pill dispenser comprising:

a pill carrier having a top side and a bottom side, each characterized by a substantially level, continuously even surface with the exception of periodic openings in the surface corresponding to a plurality of holes comprising pill chambers extending through the pill carrier between the top and bottom surfaces, wherein each pill chamber at least initially holds a pill which is sealed from the outside environment and completely contains the pill within the pill chamber such that the pill does not extend above or below the top and bottom surfaces of the pill carrier respectively;

a dispenser housing comprising,

a pill carrier slot into which said pill carrier is disposed; and

a pill dispensing channel forming a pathway from the slot to the exterior of the dispenser housing, wherein

said pill carrier is displaceable within said slot to sequentially align each of said pill chambers with said channel; and

a plunger apparatus disposed adjacent said slot and opposite said channel and capable of extending into a pill chamber which is in alignment with the channel so as to push a pill contained within the pill chamber into the channel for dispensing to the exterior of the housing.

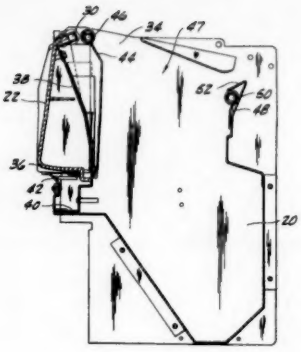
5,909,823

ANTI-PILFERAGE DOOR SYSTEM FOR A VENDING MACHINE

Philip Malone Ranft, Ballwin; Robert J. Reese, St. Charles, and Frank Leonard Walter, Maryland Hgts, all of Mo., assignors to Crane Co., Stamford, Colo.

Filed Oct. 9, 1998, Appl. No. 169,637
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—129 **8 Claims**

1. In combination with a vending machine having a product storage area above and in communication through an opening therein with a dispensing chamber having a product access opening for customer removal of products dispensed into the chamber from the storage area, an anti-pilferage door mechanism comprising:



a delivery door mounted at an upper edge thereof to the vending machine for pivotal movement about a horizontal axis from a normally closed position wherein it covers the product removal opening to an open position wherein a customer can remove product from the dispensing chamber;

an anti-pilferage door mounted at an edge thereof to the vending machine for pivotal movement about a horizontal axis from a normally open position wherein product from the storage area can pass through the opening into the dispensing chamber and a closed position wherein it substantially covers the opening in the storage area;

a rear door mounted at an edge thereof to the vending machine for pivotal movement about a horizontal axis from a normally open position wherein product from the storage area can pass through the opening into the dispensing chamber and a closed position wherein another edge thereof overlaps the anti-pilferage door to close off the product storage area opening;

linkage means interconnecting said delivery door, anti-pilferage door and rear door such that as the delivery door is pivoted a relatively few degrees the anti-pilferage and rear doors are pivoted from their normally open positions to their closed positions.

5,909,824

PROCESS AND DEVICE FOR PRESERVING CARBONATION OF CARBONATED BEVERAGE DURING CONSUMPTION

Zide Qian, and Benyu Qian, both of 4750 E. Templeton St., Unit 1210, Los Angeles, Calif. 90032

Continuation-in-part of application No. 08/500,394, Jul. 10, 1995, abandoned. This application Jun. 19, 1998, Appl. No. 99,846.

Int. Cl.[6] G01F *11/28*

U.S. Cl. 222—1 **21 Claims**

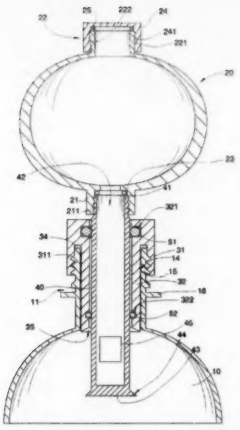
1. A process for preserving carbonation of carbonated beverage during consumption, comprising the steps of:

(a) sealedly and airtightly closing a bottle opening of a carbonated beverage containing bottle having a carbonated beverage therein;

(b) sealedly and airtightly closing an outlet of an airtight closed container which has a smaller volume than said carbonated beverage containing bottle and is connected to said carbonated beverage containing bottle by means of an adapter means;

(c) opening said bottle opening of said carbonated beverage containing bottle and pouring an amount of said carbonated beverage equal to or less than a capacity of said airtight closed container from said carbonated beverage containing bottle to fill said airtight closed container via said adapter means;

(d) sealedly and airtightly closing said bottle opening of said carbonated beverage containing bottle again;



(e) opening an outlet of beverage airtight closed container to consume said carbonated beverage filled therein while said bottle opening of said carbonated beverage containing bottle remain sealedly and airtightly closed; and

(f) re-closing said outlet of said airtight closed container in an airtight manner.

5,909,825

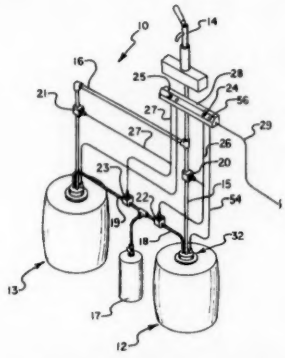
BEVERIDGE DISPENSING SYSTEM

Steven R. Lydford, 1A First Floor 12th St. Aubyns, Hove, Sussex, United Kingdom, BN3 2TB

Filed Apr. 17, 1997, Appl. No. 842,763

Int. Cl.[6] B67D *5/08*

U.S. Cl. 222—67 **16 Claims**



1. A beverage dispensing system for uninteruptedly serving beverages by permitting remote switching from a nearly emptied primary beverage container to a full secondary beverage container, said beverage dispensing system comprising:

a primary beverage container and a secondary beverage container, each beverage container containing a beverage therein;

a beverage dispenser;

conduit means connected between the primary beverage container and the dispenser and between the secondary beverage container and the dispenser for directing the beverages from the primary container and the secondary container to the beverage dispenser;

sensing means for sensing the amount of beverage within the primary beverage container, wherein said sensing means comprises a float disposed inside of the primary beverage container;

signal means actuated by said float for generating a signal when the predetermined amount of beverage is reached, wherein said signal means comprises a first contact member connected to the float and a second contact member connected to the primary container, and a warning signal light being electrically connected to the first and the second contact members such that the signal light is illuminated when the first and the second contact members contact each other; and

control means for controlling flow through the conduit means, said control means having an initial configuration where the beverage is allowed to flow from the primary container to the beverage dispenser and the beverage within the secondary container is prevented from flowing to the beverage dispenser, and said control means having a back-up configuration where the beverage is prevented from flowing from the primary container to the dispenser and the beverage is allowed to flow from the secondary container to the dispenser, the configuration of said control means being changed from the initial configuration to the back-up configuration by an operator when the sensing means senses that there is a predetermined amount of beverage remaining within the primary container.

5,909,826

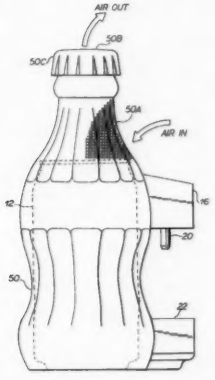
ROUND DRINK DISPENSER

William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Division of application No. 08/462,886, Jun. 5, 1995, Pat. No. 5,715,700. This application Sep. 2, 1997, Appl. No. 921,584.

Int. Cl.[6] **B67D** *5/56*

U.S. Cl. 222—78 **24 Claims**



1. A cabinet assembly for a post-mix beverage dispenser comprising:

a cylindrical housing simulating the appearance of a first container in which the beverage could be served;

a valve assembly extending from an outside portion of the cylindrical housing for dispensing the post-mix beverage; and

a decorative sleeve surrounding the cylindrical housing, the decorative sleeve simulating the appearance of a second container different from the first container in which the post-mix beverage could be served.

5,909,827

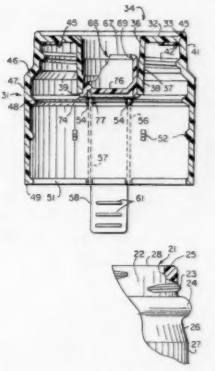
NON-SPILL BOTTLE CAP

Steven Bietzer, Sunnyvale; Brian M. Adams, Newark, and Daniel Luch, Morgan Hill, all of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Division of application No. 08/785,201, Jan. 17, 1997, which is a continuation-in-part of application No. 08/441,322, May 15, 1995, Pat. No. 5,687,865, which is a continuation-in-part of application No. 08/368,752, Jan. 4, 1995, Pat. No. 5,513,763, which is a continuation of application No. 08/016,577, Feb. 10, 1993, abandoned. This application Sep. 17, 1998, Appl. No. 156,803.

Int. Cl.[6] **B67D** *5/00;5/56;* **B65D** *39/00*

U.S. Cl. 222—83.5 **24 Claims**



1. A cap for a bottleneck used on a water dispenser comprising a top, a skirt depending from the periphery of said top, said skirt being shaped to fit over and engage the exterior of the bottleneck, said skirt having a bottom edge, said skirt having internal bottleneck engaging means, said skirt being formed with a pair of spaced, substantially vertical score lines extending upward from said bottom edge, at least one said score line extending above said bottleneck engaging means, and a tear tab located between said score lines.

5,909,828

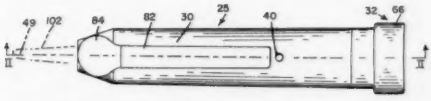
COMPRESSIBLE TUBE DISPENSER WITH ADJUSTABLE ACTUATING LEVER

Richard Salisbury, San Clemente, Calif., assignor to Source 1 Ergonomics, Inc., Santa Clara, Calif.

Provisional application No. 60/047,060, May 19, 1997. This application May 19, 1998, Appl. No. 81,478.

Int. Cl.[6] **B65D** *35/28*

U.S. Cl. 222—103 **12 Claims**



1. A liquid dispenser comprising:

(a) a housing having a chamber for containing a compressible tube containing a liquid to be dispensed, said tube having a rear end and a frond end which includes a dispensing nozzle, said housing having a front end, a rear end, a front opening to the chamber at said front end for the dispensing nozzle of said tube, and a side opening to the chamber, said housing having a central longitudinal axis;

(b) an actuating lever pivotally connected to the housing for movement toward and away from said central longitudinal axis and said side opening, said actuating lever having a protrusion which extends through said side opening for

engaging said tube and a handle portion located outside said housing for pressing engagement by an operator for causing said actuating lever to move toward said tube and causing said protrusion to compress said tube to force liquid from said tube through end of said tube through the dispensing nozzle; and

(c) stop means for limiting the movement of said actuating lever toward said tube.

5,909,829

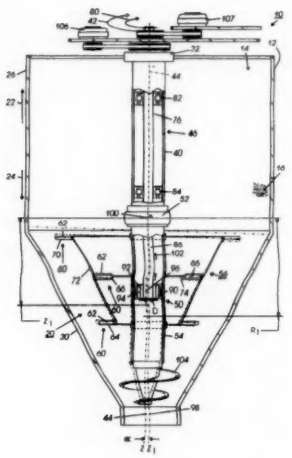
VIBRATORY FILLER FOR POWDERS

Paul M. Wegman, Pittsford; Mikhail Vaynshteyn, Rochester, both of N.Y.; Oleg Y. Abramov, St. Petersburg, Russian Federation; Sergei D. Ryabov, St. Petersburg, Russian Federation; Yuri A. Yudin, St. Petersburg, Russian Federation; Alexander G. Kashkarov, St. Petersburg, Russian Federation; Alexander N. Gerasimov, St. Petersburg, Russian Federation, and Victor A. Kouzmitchev, St. Petersburg, Russian Federation, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1997, Appl. No. 823,034

Int. Cl.[6] G01F *11/00*

U.S. Cl. 222—232 **12 Claims**



3. An apparatus for assisting the flow of powder from a hopper, the hopper defining an aperture in the lower portion thereof, the apparatus comprising:

a body defining a body longitudinal axis thereof and rotatably mounted to the hopper;

a shaft defining a shaft longitudinal axis thereof and rotatably mounted at least partially within said body;

a flexible coupling extending from one end of said body; and secured thereto; and

a member pivotably secured to and extending downwardly from said flexible coupling, said member operably associated with said flexible coupling and said shaft so as to permit said member to precess about said shaft longitudinal axis.

5,909,830

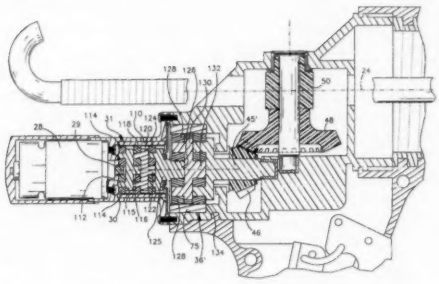
ELECTRICALLY OPERATED MATERIAL DISPENSING GUN AND METHOD

Darryle E. Bates, Stow, and Scott S. Kalanish, Hiram, both of Ohio, assignors to Essex Specialty Products, Inc., Auburn Hills, Mich.

Continuation-in-part of application No. 08/663,320, filed as application No. PCT/WO96/3419960503, May 3, 1996, Pat. No. 5,775,539, which is a continuation-in-part of application No. 08/435,343, May 5, 1995, abandoned. This application Feb. 20, 1997, Appl. No. 803,220.

Int. Cl.[6] G01F *11/00*

U.S. Cl. 222—327 **37 Claims**



1. An electrically operated viscous material dispenser comprising:

a) a housing including body and handle portions for housing a motor and a motor control;

b) the housing also including a material dispensing portion extending from the body and handle portions, the dispensing portion including a material receiving space;

c) an electric motor carried by the housing, the motor having an output shaft for rotation about a shaft axis;

d) a push rod reciprocatably mounted in the housing for extension into the space to apply a dispensing force to a material being dispensed, the rod being generally parallel to the output shaft and projecting rearwardly out of the housing in spaced relationship with the motor portion, the rod also including a set of rack teeth;

e) a plurality of axially aligned planetary stages in axial alignment with and operably connected to the shaft for rotation about said axis, one of the planetary stages being an output stage including a sun gear, a ring gear and a set of planetary gears interposed between and engaging the sun and ring gears;

f) the ring gear being concentrically disposed about and coaxial with the sun gear, the ring gear also including a peripheral surface having at least one element engaging part;

g) gearing interconnecting the planet gears with the rack teeth in push rod drivable relationship; and,

h) a moveable element carried by the housing and selectively engageable with the part to prevent ring gear rotation and thereby cause orbiting of the planet gears about the sun gear.

5,909,831

SOCK AND SUPPORT HOSE INSTALLER DEVICE

Bernard L. Griffin, 5212 Millwood Rd., Montgomery, Ala. 36109

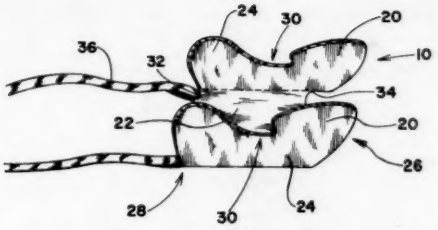
Provisional application No. 60/075,486, Feb. 23, 1998. This application Jul. 2, 1998, Appl. No. 109,394.

Int. Cl.[6] A47G *25/80*

U.S. Cl. 223—112 **7 Claims**

1. A manually operable device for applying foot coverings including socks, support hose and the like comprising;

a) an elongated U-shaped unitary member of flexible material with horizontal bottom portion and generally vertical side portions, the U-shaped member having toe and heel ends, said



toe end side portions extending beyond said toe end bottom portion and terminating in spade shaped ends adapted to flex toward each other upon inserting said toe ends into a foot covering, said side portions each having a concave area at about a midpoint thereof for receiving and reversibly maintaining a foot covering inserted over said toe ends; and

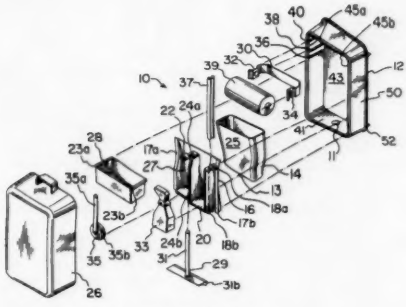
b) strap means connected to said U-shaped member heel end, whereby a user inserts said spade shaped toe ends into an open end of a foot covering, positions a majority of the foot covering about said U-shaped member concave area, inserts a foot into said U-shaped member from said heel end thereof, and with said strap means attached thereto, draws the U-shaped member up the foot and leg of the user, and out of the open end of the foot covering, thereby positioning the foot covering on the foot and leg of the user.

5,909,832

VEHICLE CLEANING KIT

Roland C. A. French, and Cyril L. A. French, both of 91-1361 30th Street S.E., Salmon Arm, British Columbia, Canada, V1E 2P2

Filed May 28, 1998, Appl. No. 86,254
Int. Cl.[6] B60R *7/00*
U.S. Cl. 224—547 **14 Claims**



1. A vehicle cleaning kit comprising:

(a) a housing having a sidewall and a back wall;

(b) a fluid container dimensioned to removably fit within said housing proximate said back wall;

(c) means for removably retaining a plurality of cleaning components within said housing;

(d) a housing lid engageable with said housing and dimensioned to substantially fit around a perimeter of said housing in substantially abutting engagement therewith; and

(e) means for mounting said housing to a vehicle with said fluid container in an upwardly arrangement.

14. A vehicle cleaning kit comprising:

(a) a housing having a substantially endless sidewall, a back wall and upper and lower ends;

(b) a fluid container dimensioned to removably fit within said housing proximate said back wall, said fluid container having an open end, a closed end and a drain pipe proximate said closed end;

(c) a panel assembly removably coupled to said housing and being adapted to removably retain at least one of: (i) a cleaning brush with a shaft; (ii) a spray bottle; and (iii) a squeegy;

(d) a housing lid dimensioned to cover said housing and to substantially fit around a perimeter of said housing in abutting engagement therewith; and

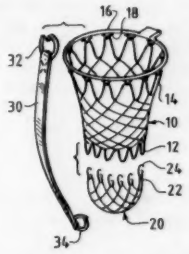
(e) means for mounting said housing to a vehicle with said fluid container in said upwardly arrangement.

5,909,833

UTILITY BAG FOR SPORTS GEAR

Samuel J. Smith, 3041 S. Michigan, #401, Chicago, Ill. 60616

Filed May 26, 1998, Appl. No. 84,608
Int. Cl.[6] B65D *30/06;30/10;33/06*
U.S. Cl. 224—577 **13 Claims**



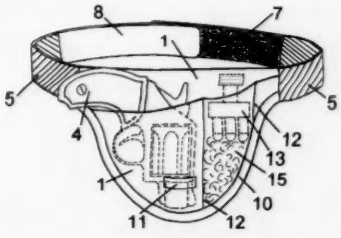
1. A utility bag for sports gear comprising a generally cylindrical hollow body portion formed by a continuous wall and having an open top end with loops and an open bottom end with loops, a bottom portion having connector means for removably connecting said bottom portion to said bottom end loops of said body portion for closing said body portion bottom end, and a shoulder strap having connector means at each end for removably connecting one strap end to said body portion and the other strap end to said bottom portion.

5,909,834

CONCEALED CARRY HOLSTER

Charles W. Parrott, III, 3315 S.W. 45th Ct., Ft. Lauderdale, *Fla. 33312*

Filed Jul. 14, 1997, Appl. No. 912,959
Int. Cl.[6] A45C *1/04*
U.S. Cl. 224—587 **11 Claims**



1. A handgun holster for concealment under user clothing, comprising:

a forward panel having a forward panel upper edge, two opposing forward panel side edges and a forward panel lower edge, said forward panel comprising a forward sheet of flexible material having a forward sheet lower edge, two forward sheet side edges, and a forward sheet upper edge, and a rearward sheet of flexible material having a rearward sheet lower edge sewn to said forward sheet lower edge, two

rearward sheet side edges sewn to adjacent said forward sheet side edges and thereby forming two composite sheet side edges, and a rearward sheet upper edge, said rearward sheet upper edge being folded over itself toward said forward sheet and forming a rearward cuff, and said forward sheet upper edge being folded over itself toward said rearward sheet and forming a forward cuff, said rearward cuff and said forward cuff being interconnected by a stitched cuff interconnection seam, such that said forward and rearward sheet cuffs are sealed from contact with a gun;

a rearward panel having a rearward panel upper edge, two opposing rearward panel side edges joined to corresponding said forward panel side edges and a rearward panel lower edge joined to said forward panel lower edge, said forward panel and said rearward panel together defining a gun receiving pocket having two opposing pocket side edges and said forward panel upper edge and said rearward panel upper edge defining a gun passing opening;

strap means extending from said forward and rearward panels rearwardly and defining a loop for encircling and thereby engaging a user's waist, and wherein said strap means comprises a user waist strap connected to and extending from one said pocket side edge to the other said pocket side edge.

5,909,835

GRIPPER FEEDER FOR METAL STRIP

Donato Zanette, Maserada Sul Piave, Italy, assignor to Dalcos S.R.L., Italy

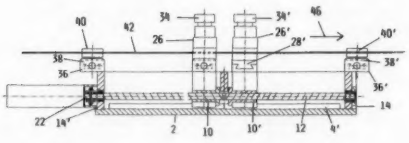
PCT No. PCT/EP94/02214, § 371 Date Apr. 16, 1996, § 102(e) Date Apr. 16, 1996, PCT Pub. No. WO95/17984, PCT Pub. Date Jul. 6, 1995

PCT Filed Jul. 6, 1994, Appl. No. 628,633

Claims priority, application Italy, Dec. 30, 1993, VE93A0039

Int. Cl.[6] **B65H** *20/24;23/06;* **F16H** *1/18*

U.S. Cl. 226—112 **10 Claims**



1. A gripper feeder for a metal strip comprising:

a base;

guide means for guiding at least one pair of carriages slidable along said guide means;

a gripper mounted on each carriage of said at least one pair of carriages, for engagement of said metal strip to be moved;

members for moving said gripper in a first direction of movement parallel to a longitudinal axis of said strip and in a second direction of movement opposite to said first direction;

means for independently operating said gripper of said at least one pair of carriages such that when said gripper of one of said at least one pair of carriages moves in said first direction of movement of said strip and is activated, a gripper of a second carriage of said at least one pair carriages moves in said second opposite direction and is deactivated,

said members for moving said at least one pair of carriages includes a single threaded rod and a single electric motor, which rotates said threaded rod, said motor being powered alternately in said first and second directions, wherein said rod has a first portion and a second portion threaded in opposite directions, a threaded bush provided on one carriage of said at least one pair of carriages engaging said first portion and a threaded bush provided in said second carriage of said at least one pair of carriages engaging said second portion.

5,909,836

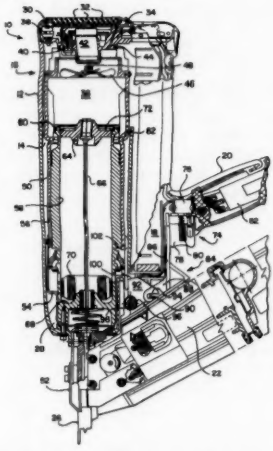
COMBUSTION POWERED TOOL WITH COMBUSTION CHAMBER LOCKOUT

Yury Shkolnikov, Glenview, and Tony Deieso, Wadsworth, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Oct. 31, 1997, Appl. No. 961,811

Int. Cl.[6] **B25C** *1/04*

U.S. Cl. 227—8 **12 Claims**



10. A combustion powered fastener driving tool having a self-contained internal combustion power source and constructed and arranged for creating a combustion for driving a driver blade to impact a fastener and drive it into a work piece, comprising:

a housing having a main chamber enclosing the power source;

a combustion chamber being defined within said main chamber;

a cylinder within said main chamber, and a piston, said cylinder enclosing said piston to drive the driver blade toward the fastener as the piston is driven toward a second end of said cylinder, and said piston configured for reciprocal movement within said cylinder between a start position located at a first end of said cylinder and a driving position located at said second end of said cylinder;

a trigger switch assembly disposed in said housing and connected to said power source for initiating combustion in said combustion chamber, said trigger switch assembly including a trigger operating between an ON position and an OFF position;

a valve assembly for releasably sealing said combustion chamber from atmosphere;

a lockout mechanism connected to said trigger switch assembly and said valve assembly for preventing the opening of said combustion chamber to atmosphere until said trigger is released from said ON position; and

delay means connected to said trigger switch assembly for *delaying the release of said trigger from said ON position,* thereby delaying the opening of said combustion chamber by said valve through said lockout mechanism until said piston returns to said start position after driving the fastener.

5,909,837

CONTACTLESS BONDING TOOL HEATER

Ali Reza Safabakhsh, Yardley, and John Joseph Kilgarriff, Norristown, both of Pa., assignors to Quad Systems Corporation, Willow Grove, Pa.

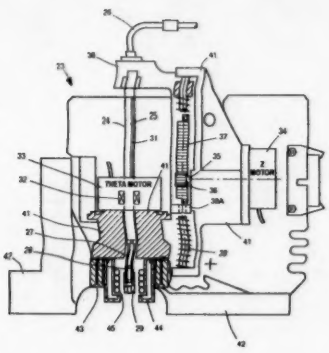
Filed May 9, 1997, Appl. No. 853,877

Int. Cl.[6] **B23K** *1/005;* **B32B** *31/20;31/26*

U.S. Cl. 228—6.2 **13 Claims**

4. Apparatus for heating devices during placement, comprising:

a pick and place machine,



a bond head on said pick and place machine movable in an X and a Y direction,

a vacuum actuated pick-up tool mounted in said bond head movable in a vertical and a rotary direction,

a radiant energy heater fixedly mounted in said bond head and spaced apart from said pick-up tool for heating the tip of the said pick-up tool.

5,909,838

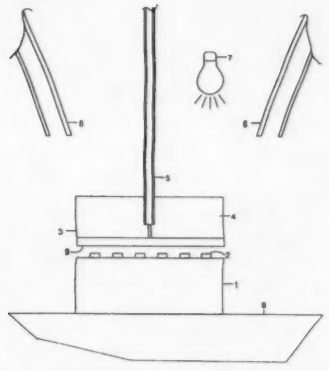
METHOD OF SOLDER REMOVAL

Lisa Jeanine Jimarez, and Miguel Angel Jimarez, both of 119 Main St., Newark Valley, N.Y. 13811

Filed Nov. 4, 1997, Appl. No. 964,291

Int. Cl.[6] B23K *1/018*

U.S. Cl. 228—125 **22 Claims**



1. A structure for removing solder material from an article, comprising:

means for positioning a metal foil having a surface with micro-roughness adjacent solder material on an article; and

means for heating said metal foil to a temperature sufficient to melt at least some of said solder material such that at least some of said solder material is drawn onto said surface having said micro-roughness.

5,909,839

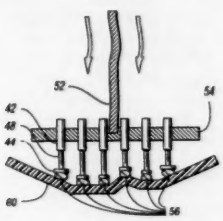
METHOD FOR DISPENSING SOLDER PASTE ON A NON-PLANAR SUBSTRATE USING AN ARRAY OF ULTRASONICALLY AGITATED PINS

***Robert Edward Belke, Jr., West Bloomfield; John Trublowski,* Troy, and Michael George Todd, South Lyon, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

Filed May 15, 1997, Appl. No. 857,159

Int. Cl.[6] B23K *35/12;31/02*

U.S. Cl. 228—248.1 **3 Claims**



1. A method of applying solder to a plurality of locations on a three-dimensional non-planar electronic substrate, comprising:

providing a solder transfer device including a movable base with an array of pins connected to the base, each pin having a distal end which is vertically movable with respect to the base independently of the rest of the array of pins;

dipping the distal ends of said pins in a tray of solder paste;

moving the base toward the non-planar electronic substrate such that the distal ends of the array of pins contact the plurality of locations for applying the solder paste to the locations, and

ultrasonically agitating the array of pins to encourage solder transfer from the pins to the substrate.

5,909,840

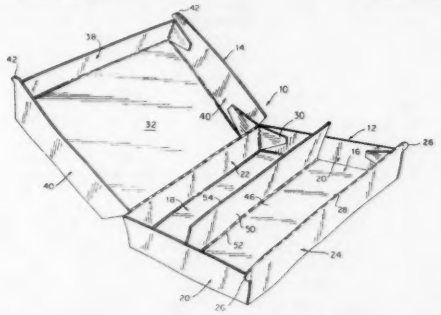
CLAMSHELL CARTON WITH PARTITIONS

Karl F. Schultheiss, Middletown, Ohio, assignor to Dopaco, Inc., Exton, Pa.

Filed Jul. 27, 1998, Appl. No. 122,662

Int. Cl.[6] B65D *5/488*

U.S. Cl. 229—120.17 **18 Claims**



1. A carton comprising a tray and a cover, said tray comprising a bottom panel with a periphery, front and rear walls integral with and extending upward from said periphery, side walls integral with and extending upward from said periphery between said front and rear walls, each of said walls having an upper edge, said cover being integral with and foldable relative to said tray along the upper edge of said rear wall between an open position with the cover remote from said tray and a closed position with the cover overlying said tray, and a unitary partition panel having a front edge integral with and foldable relative to said front wall along the upper edge thereof, said partition panel including a front section overlying said front wall, an intermediate section extending from

said front section and engaged on and overlying said tray bottom panel, and a partition extending from said intermediate section and selectively foldable between a first position engaged on and overlying said tray bottom panel, and a second position extending upward from said intermediate section between said front and rear walls of said tray.

5,909,841

BEVERAGE CONTAINER

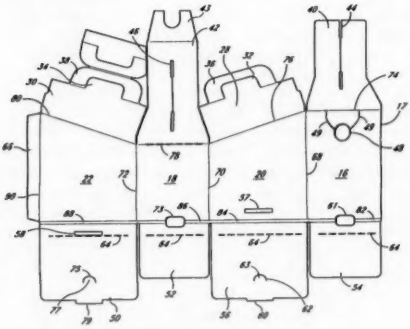
Jared P. Andrews, Sr., Grand Terrace, and John W. Goodin, Coto de Caza, both of Calif., assignors to J & M Coffee Container Company, Inc., Grand Terrace, Calif.

Continuation of application No. 08/645,218, May 13, 1996, Pat. No. 5,715,992, Provisional application No. 60/004,298, Aug. 26, 1995. This application Sep. 10, 1997, Appl. No. 926,520.

This patent is subject to a terminal disclaimer

Int. Cl.[6] B65O *5/74*

U.S. Cl. 229—125.15 **16 Claims**



1. A liquid container comprising:

an outer shell having a top, a bottom and sidewalls, the outer shell having an opening in one of said sidewalls;

a flexible bag within said outer shell defining an aperture;

a mouth secured to said flexible bag surrounding said aperture and defining a fluid passageway, said mouth sized and shaped such that fluid can be poured through said mouth from a source having an outlet spaced above said mouth;

a handle extending outward from said top of said outer shell, said handle having sufficient strength to provide essentially all support for said container when said flexible bag is filled with liquid in a first position wherein said opening is facing upwards and in a second position wherein said opening is facing sidewards, one of said sidewalls facing downward in said first position and the bottom facing downward in said second position.

5,909,842

CONTAINER FOLDING MACHINE AND PRODUCT THEREOF

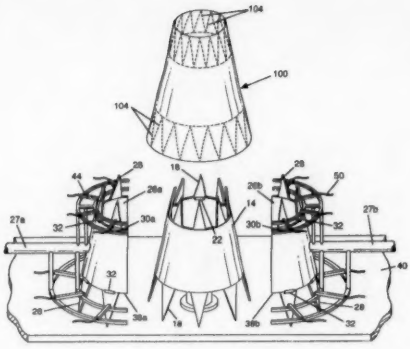
Gary Allmon, 8426 Broadview Rd., Broadview Heights, Ohio 44147

Continuation-in-part of application No. 08/624,074, Mar. 29, 1996, abandoned. This application Dec. 21, 1996, Appl. No. 778,109.

Int. Cl.[6] B65D *3/10*

U.S. Cl. 229—404 **17 Claims**

1. A container blank in the shape of a cylindrical frustum and comprising a body having at least one circular opening at one end thereof, said container blank containing a plurality of creases that define a plurality of contiguous isosceles triangles to be folded into fanfold ribs around said at least one opening, said creases formed



by the steps of creating a plurality of score lines around the periphery of the at least one opening to form the contiguous triangles, placing the container blank in a creasing machine containing a plurality of triangular fingers, whereby the fingers are in registry with the contiguous triangles, and actuating the fingers to form creases in the blank along the score lines around the at least one said opening.

5,909,843

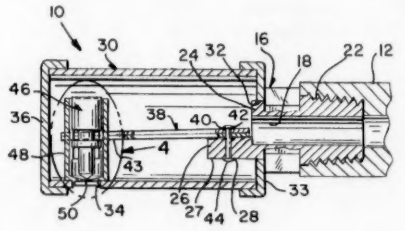
STEAM RADIATOR EXHAUST VALVE

Henry Ramo, 77-07 164th St., Flushing, N.Y. 11366

Filed Sep. 23, 1997, Appl. No. 935,714

Int. Cl.[6] G05D *23/08*

U.S. Cl. 236—66 **11 Claims**



1. An exhaust valve for threading into a street elbow threaded into an exhaust port of a conventional steam radiator, comprising:

a) a base portion;

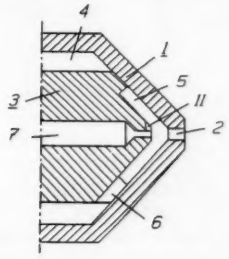
b) a cap portion supported by said base portion; and

c) a bimetallic arm contained in said cap portion, wherein said base portion is elongated and vertically-oriented and has only one central throughbore extending longitudinally completely therethrough for conducting exhaust steam away from the conventional steam radiator, wherein said base portion further has a nut-shaped portion for facilitating threading said base portion into the street elbow, wherein said base portion further has a neck that is cylindrically-shaped and extends coaxially from the other side of said nut-shaped portion of said base portion, wherein said base portion further has a ledge that is semi-cylindrically-shaped and extends coaxially from said neck of said base portion and provides a broad surface onto which condensate in exhaust steam from the conventional steam radiator is attracted and deposited as it passes through said base portion so as to prevent the steam condensate from interfering with the exhaust steam from the conventional steam radiator.

5,909,844
WATER ATOMIZING NOZZLE FOR SNOW MAKING MACHINE

Lennart Nilsson, Östersund, Sweden, assignor to Lenko L Nilsson, Ostersund, Sweden

PCT No. PCT/SE96/00358, § 371 Date Nov. 20, 1997, § 102(e) Date Nov. 20, 1997, PCT Pub. No. WO97/01392, PCT Pub. Date Jan. 16, 1997
PCT Filed Mar. 21, 1996, Appl. No. 952,432
Claims priority, application Sweden, Jun. 27, 1995, 9502328
Int. Cl.[6] F25C *3/04*
U.S. Cl. 239—14.2 **2 Claims**



1. Water atomizing nozzle for use in snow making machines in which water is disintegrated into very small water particles in a ring of atomizing nozzles surrounding an air channel through which air flows at high speed, and whereby the water droplets which are carried by the air freeze to snow or ice crystals and are allowed to fall to the ground some distance downstream the snow making machine, characterized in that the atomizing nozzle comprises an outer hollow nozzle cone having an inner cone mounted therein, which inner cone with a front tip thereof is in bottom contact with the outlet end of the outer cone, and in which there is formed a channel for feed water between the inner and outer cones, and in which the inner cone is formed with a central air channel through which air of high pressure and high speed is moved straight through the inner nozzle cone and out through an outlet spray bore of the outer nozzle cone, and in which swirl chamber for feeder water is provided between the inner and outer cones and from which swirl chamber a minor amount of water can be separated and be carried out through the nozzle together with the flow of air, thereby forming a central plume of airborne nuclei, whereas the remaining part of the swirling feeder water is pressed out through the nozzle in the form of a hollow cone of cooled or frozen water droplets surrounding the plume of nuclei; and the downstream end of the inner cone of the nozzle is formed with one or more cross slots or radially extending slots which brake(s) the movement of a little portion of the water flow in the swirl chamber and disintegrates said portion of the water so that it can be carried away and can be disintegrated into extremely small water droplets by the flow of air passing through the air channel.

5,909,845
WICK-BASED LIQUID EMANATION SYSTEM WITH CHILD-RESISTANT OVERCAP

Keith J. Greatbatch, Crowthorne, United Kingdom, and Mark E. Welfer, Mt. Pleasant, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

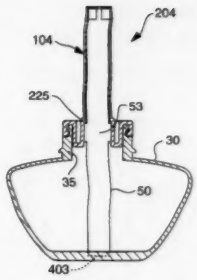
Filed Jun. 28, 1996, Appl. No. 673,393
Int. Cl.[6] A24F *25/00*
U.S. Cl. 239—44 **29 Claims**

12. A child-resistant, wick-based liquid emanation system comprising:

a container capable of containing liquid;

a unitary, hollow spout projecting from said container, said spout having a closed tip, separable from the spout; and

a wick partially disposed within said container and having an extended portion extending into said spout, said spout closely conforming to the shape and size of said wick,

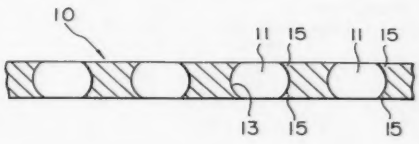


wherein said system is activated by separating said tip from said spout.

5,909,846
NOZZLE PLATE FOR FILLING LIQUID

Masanori Sasaki, Fujisawa, Japan, assignor to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

PCT No. PCT/JP95/01935, § 371 Date May 15, 1997, § 102(e) Date May 15, 1997, PCT Pub. No. WO96/09956, PCT Pub. Date Apr. 4, 1996
PCT Filed Sep. 26, 1995, Appl. No. 809,625
Claims priority, application Japan, Sep. 28, 1994, 6-259524
Int. Cl.[6] B05B *15/00; 1/14*
U.S. Cl. 239—106 **17 Claims**



1. A liquid filling nozzle plate for a liquid filling device comprising a plate member provided with a plurality of through-holes, said nozzle plate being attached to a lower end opening of a liquid filling tube of the liquid filling device to prevent liquid filling said liquid filling tube from flowing out of said plate as a result of surface tension of said liquid,

wherein an inner peripheral surface of each of said through-holes provided in said liquid filling nozzle plate is provided with a circumferential projection projecting in a direction in which an inner diameter of the through-hole is reduced to increase surface tension in the through-hole.

5,909,847
FLUSHING CLEANER FOR MULTIPLE SHOWER WAND ASSEMBLIES

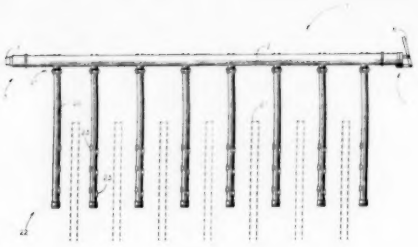
Denis Munsche, Neenah, and Daniel Schwalenberg, Little Chute, both of Wis., assignors to Productive Solutions Inc., Neenah, Wis.

Provisional application No. 60/039,769, Mar. 3, 1997. This application Feb. 27, 1998, Appl. No. 32,489.
Int. Cl.[6] B05B *15/02*
U.S. Cl. 239—116 **5 Claims**

1. A spray nozzle cleaning apparatus for manifolded spray wand assemblies comprising:

a) an elongate manifold chamber having a cross sectional area and a liquid introduction port and a multiplicity of shower wands extending laterally from the manifold,

b) each wand having a cross sectional area, a manifold end and a valve end and at least one spray orifice directed laterally to said wand,



c) a rotating valve at said valve end of each wand and the rotating valve is provided with a discharge port that has an area that is no larger than 1/N times the cross sectional area of one of the wands where N equals the number of wands extending from said manifold,

d) a central brush rod secured to said valve and at least one brush secured to said rod and said brush is positioned so that said brush will pass over said spray orifice and said valve is openable and closeable by means of the rotation of said rod,

e) a means for rotating all the brush rods in all the shower wands in unison.

5,909,848

HIGH PRESSURE LIQUID ROTARY NOZZLE WITH COIL SPRING RETARDER

Gerald P. Zink, Durango, Colo., assignor to Stoneage, Inc., Durango, Colo.

Filed Jul. 17, 1998, Appl. No. 118,489
Int. Cl.[6] B05B *3/06*
U.S. Cl. 239—252 **29 Claims**

1. A rotary retarding device for connection between a reference structure and a rotary structure to control the speed of rotation of the rotary structure relative to the reference structure,

said device comprising a friction surface means connected to said reference structure and providing an internal cylindrical surface coaxial with an axis of rotation of said rotary structure,

centrifugally responsive weight means carried by and rotatable with said rotary structure,

said weight means having external surface portions engageable with said internal cylindrical surface upon centrifugal outward displacement of said weight means with respect to said axis,

spring biasing means for biasing said weight means toward said axis and away from said internal cylindrical surface,

driving means for rotating said rotary structure in one direction about said axis,

a helically wound coil spring coaxially encircling a portion of said rotary structure and having one end in driven engagement with a portion of said rotary structure which tends to unwind and increase the diameter of the coil spring when said one end of the coil spring is driven by the rotary structure in said one direction,

means for coupling a second end of said coil spring to said weight means whereby the coil spring rotates said weight means in said one direction about said axis in response to rotation of the rotary structure in said one direction,

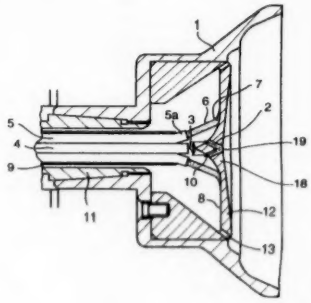
said weight means being centrifugally responsive to increased rotational speed of said rotary structure in said one direction to frictionally engage said internal cylindrical surface and retard movement of said second end of the coil spring in said one direction and increasingly unwind the coil spring so that its turns increase in diameter and frictionally engage said internal cylindrical surface to retard relative rotational movement of said rotary structure with respect to said reference structure.

5,909,849

ROTARY ATOMIZING ELECTROSTATIC COATING APPARATUS

Isamu Yamasaki, Toyota; Ichio Tomita, Aichi-ken; Kengo Honma, Tokai, and Sinichi Takahashi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 16, 1997, Appl. No. 784,906
Claims priority, application Japan, Jan. 19, 1996, 8-007264
Int. Cl.[6] B05B *5/00*
U.S. Cl. 239—700 **6 Claims**



1. A rotary atomizing electrostatic coating apparatus comprising:

a rotary atomizing head including an axis of rotation, said rotary atomizing head including a hub having a front surface and a rear surface, said rear surface being substantially conical and protruding rearwardly, said hub having a plurality of bores formed therein for self-cleaning said rotary atomizing head by permitting thinner to pass therethrough when cleaning is conducted, said plurality of bores having a plurality of respective rear openings open at said rear surface of said hub and located on a circle having a circle center at said axis of rotation of said atomizing head; and

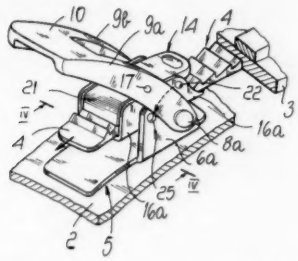
a paint feed nozzle assembly including a center nozzle disposed on said axis of rotation of said rotary atomizing head and at least one surrounding nozzle disposed generally adjacent said center nozzle, said center nozzle including a front end having an inside surface, said at least one surrounding nozzle each including a front end having an inside surface,

wherein an intersection of a frontward projection of said inside surface of said front end of each said at least one surrounding nozzle with said rear surface of said hub is offset from said rear openings of said plurality of bores.

5,909,850
FASTENING DEVICE PARTICULARLY FOR SPORTS SHOES

Giuseppe Cavasin, Montebelluna, and Giovanni Dal Din, Caerano San Marco, both of Italy, assignors to Roces S.R.L., Italy

Filed Jan. 28, 1998, Appl. No. 14,200
Claims priority, application Italy, Apr. 2, 1997, MI970068 U
Int. Cl.[6] A43C *11/14*
U.S. Cl. 24—71 SK **6 Claims**



1. A fastening device for a shoe comprising at least a first member and a second member to be fastened together, said device comprising:

a base connected to said first member, said base including a pair of shoulders;

a toothed member connected to said second member;

a lever arm pivoted to said shoulders;

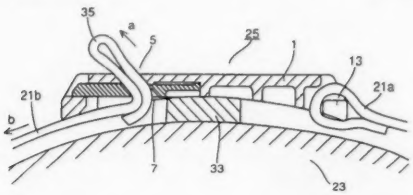
a pawl means coupled with said lever arm and adapted to selectively engage at least one tooth of said toothed member, said pawl means including a pawl and a support, said pawl being pivoted to said support, said support being pivoted to said lever arm; and

an engagement means provided on said pawl means and on said base and adapted to firmly and releasably lock said pawl means to said base, said engagement means including at least one protrusion formed on said support and further including at least one seat formed on at least one of said shoulders, said protrusion coacting with said seat to releasably lock said pawl means to said base.

5,909,851
ATTACHING EQUIPMENT FOR DETACHABLY ENGAGING A STRING-TYPE OBJECT

Takuya Fujimoto, Osaka, Japan, assignor to Cat Eye Co., Ltd., Japan

Filed Mar. 5, 1996, Appl. No. 611,066
Claims priority, application Japan, Mar. 8, 1995, 7-048073
Int. Cl.[6] A44B *11/25*
U.S. Cl. 24—196 **7 Claims**



1. An attaching equipment comprising in combination:

a elastic string-type object having one end attached to the attaching equipment and a free end;

a first attachment part having a substantially planar surface, a first slit of predetermined width allowing insertion and passage of said free end of said string-type object therethrough, said first slit formed at an acute angle to the planar surface of the first attachment part and having a blade-like portion provided at a peripheral edge;

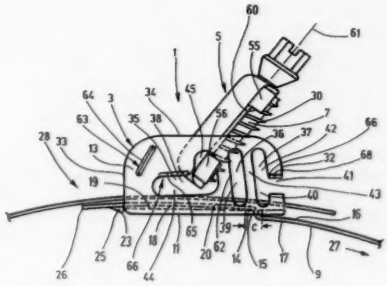
a second attachment part having a substantially planar surface slidably engaging with said planar surface of said first attachment part and having a second slit of predetermined width fully aligned with said first slit at a prescribed engaging position, the predetermined width of the first slit being substantially the same as the predetermined width of the second slit, said second slit formed at an acute angle to said planar surface of the second attachment part and having a blade-like portion provided at a peripheral edge, the acute angle of the first slit coinciding with the acute angle of the second slit when the first and second slits are fully aligned, allowing insertion and passage of said free end of said string-type object therethrough; and

wherein to fix the position of the string-type object with respect to the attaching equipment, the first and second attachment parts are slid relative to one another to move the first slit and the second slit relative to one another so that they become less aligned and the blade-like portions on the attachment parts pinch the string-type object to prevent the string-type object to be drawn out from the first and second slits.

5,909,852
HOSE CLAMP

Kurt Allert, Oberndorf, Germany, assignor to Hans Oetiker AG Maschinen-Und Apparatefabrik, Horgen, Switzerland

Filed Dec. 19, 1997, Appl. No. 995,249
Claims priority, application Germany, Dec. 19, 1996, 196 53 005
Int. Cl.[6] F16L *33/08*
U.S. Cl. 24—279 **10 Claims**



1. A clamp having:

a U-shaped lower housing having a bottom, and side walls which form legs of the U-shaped lower housing, the side walls having recesses;

a tightening strap having a one and another end section, the one end section secured to the bottom of the lower housing;

an upper housing having one-piece mounting tabs (**55**, **56**) capable of engaging from the inside of the lower housing the recesses in the side walls of the lower housing, and further having front edges (**47**) which form lateral edges (**48**) of the upper housing;

a worm drive supported in the upper housing to permit rotation thereof, but no substantial axial movement thereof, the upper housing pivotally supported in the lower housing for engaging or disengaging the worm drive with the other end section of the tightening strap, the front edges extending at least approximately parallel to the longitudinal direction of the worm drive;

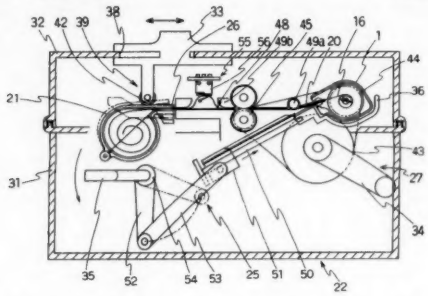
wherein the upper housing forms a contour which at least partially encloses the worm drive, and further wherein the mounting tabs originate from the front edges of the upper housing.

5,909,853

FILM-REWINDING APPARATUS

Takuji Yamaguchi, and Masasuke Funase, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

Continuation of application No. 08/423,653, Apr. 17, 1995, abandoned. This application Feb. 27, 1997, Appl. No. 806,708.
Claims priority, application Japan, Apr. 20, 1994, 6-081880
Int. Cl.[6] G03B *23/02*
U.S. Cl. 242—348.1 **3 Claims**



1. A film-rewinding apparatus for receiving and rewinding film from a cartridge having a rotatable spool in an outer case, said spool having a pawl on a shaft for engaging and winding film on said spool, said outer case having a film port and rotatably supporting said spool, a shielding door on said film port, and an intermediate magazine for receiving and storing therein the film withdrawn from said cartridge, said film being received through an opening in said intermediate magazine, the apparatus comprising:

a cartridge-support for supporting said cartridge.

a shielding door operating shaft for opening and closing said shielding door on said cartridge,

a spool driving mechanism for opening said shielding door on said cartridge and for feeding film out of said cartridge by driving said spool,

a film driving mechanism for receiving film fed out of said cartridge and for driving said film so that the film is received by said opening in said intermediate magazine for receiving film from said cartridge film to be stored,

an opening and closing lid mounted on said intermediate magazine and pivotally connected to said intermediate magazine and forming, at one end of said lid, when said lid is open with said intermediate magazine, an opening for receiving film from said cartridge into said intermediate magazine when said film is fed from said cartridge and for discharging film from said intermediate magazine when said lid is open and said film is to be discharged,

a handle mounted on said end of said lid adjacent said opening and projecting outwardly from said lid for opening and closing said lid,

a lid opening arm pivotally mounted on said apparatus and adjacent a side of said lid intermediate said one end and an opposite end of said lid and above said pivotal connection of said lid to said intermediate magazine, said lid opening arm sloping upward and away from said lid above said pivotal connection of said lid to said intermediate magazine at one end of said lid opening arm and attending under said handle at an opposite end of said lid opening arm,

a lock lever slidably mounted to said apparatus and extending vertically upward from said lid opening arm and having a roller at a vertical bottom of said lock lever, said lid opening arm and said lock lever being structured such that said roller engages said lid opening arm adjacent said handle end of said lid and to close said opening in said intermediate magazine and prevent light from entering said intermediate magazine when said lock lever is moved to said handle end of said lid and said roller engages said upward doping end to open said opening for receiving said film from said cartridge when said lock lever is moved to said upward sloping end of said lid opening arm, and

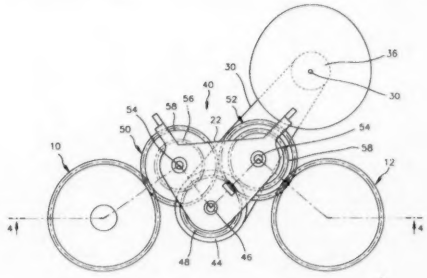
a film-dismounting mechanism having a thin elastic dismounting plate for dismounting said film from said spool by inserting said thin elastic film dismounting plate between said pawl of said spool and said film in said cartridge for transferring film from said cartridge to said intermediate magazine.

5,909,854

REEL TABLE DRIVING DEVICE FOR A VIDEO CASSETTE RECORDER

Ho-Jun Jang, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 21, 1994, Appl. No. 360,866
Claims priority, application Rep. of Korea, Dec. 22, 1993, 93-29144
Int. Cl.[6] G11B *15/32;5/008*
U.S. Cl. 242—356 **1 Claim**



1. A reel table driving device for use in a video cassette recorder having a supply reel table and a take-up reel table, which comprises:

a pulley attached to a lower end portion of a shaft rotatably held in a deck;

a driving gear mounted to the shaft;

a support plate coupled to an upper portion of the shaft; and

a pair of idlers disposed adjacent to the supply reel and the take-up reel tables, and rotatably held in said support plate by pins, each of the idlers including a first and a second stepped gears integrally formed therein, and the first and the second gears being arranged in an axially spaced relationship width each other, the first gear being meshed with said driving gear and the second gear selectively engaging with and disengaging from the supply reel and the take-up reel tables, said second gear of the first idler having more teeth than the first gear of the first idler to rotate the supply reel table at a relatively high speed, and said second gear of the second idler has fewer teeth than the first gear of the second idler to rotate the take-up reel table at a relatively low speed, thereby providing a variable torque to one of the reel tables depending on an operating mode of the video cassette recorder.

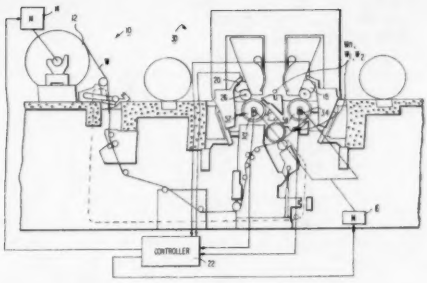
5,909,855

METHOD FOR WINDING A PAPER WEB

Marko Jorkama, Järvenpää, and Jarmo Mäkelä, Kerava, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Oct. 29, 1997, Appl. No. 960,147
Claims priority, application Finland, Oct. 29, 1996, 964355
Int. Cl.[6] B65H *23/198*
U.S. Cl. 242—414.1 **10 Claims**

1. In a method for winding a paper web in which the web is wound at a variable running speed by a winder onto a roll and the running speed of the winder is controlled, the improvement comprising the steps of:



controlling the running speed of the winder based on the frequency of rotation of the roll, said controlling step comprising the steps of

lowering the running speed of the winder from an initial running speed when the frequency of rotation of the roll approaches a range of frequencies in which intensive oscillation of the roll occurs in order to lower the speed of rotation of the roll and thus lower the frequency of rotation of the roll to a frequency of rotation lower than the lowest frequency of the range of oscillation, and thereafter

increasing the running speed of the winder while maintaining the frequency of rotation of the roll substantially constant.

5,909,856

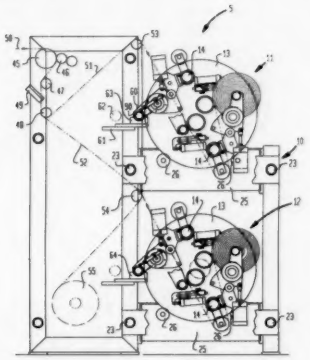
DUPLEX SLITTER/REWINDER WITH AUTOMATIC SPLICING AND SURFACE/CENTER WINDING

William R. Myer, 79 Perryville Rd., Pittstown, N.J. 08867; Alfonse V. Novelli, 5 Appletree Dr., Annandale, N.J. 08801; Henk A. Van Rietschoten, 228 N. Pond View Blvd., Cranbury, N.J. 08512, and Mark Van Denend, 349 E. 36th St., Paterson, N.J. 07504

Filed Mar. 5, 1997, Appl. No. 811,689

Int. Cl.[6] B65H *18/08*

U.S. Cl. 242—530 **14 Claims**



1. A high speed winding apparatus for the continuous rewinding of various independent widths of web material onto sized web cores, and for automatically changing wound web cores with empty web cores without interrupting said continuous rewinding, comprising:

(a) a frame;

(b) a turret means rotatably mounted in said frame for rotation about a turret means axis;

(c) winding drum means including a first winding drum and a second winding drum rotatably mounted in said turret means in generally opposing locations offset from said turret means axis;

(d) first and second winding roll support arm means having, proximal ends pivotally mounted on said turret means in opposing locations offset from said turret means axis outboard of said winding drum means, and distal ends for supporting respective first and second sized web cores for rewinding said independent widths of web material thereon; and

(e) said support arm means being indexable between a winding position wherein said sized web cores receiving the independent widths of said web material are disposed to bring the respective widths of said web material into generally continuous rolling contact with an associated one of said winding drum means for surface winding of said independent widths of said web material to provide uniformly wound web material on each of the respective wound web cores and an unloading/loading position wherein wound web cores are remote from said winding drum means when the turret means is rotated for initially repositioning an empty web core on at least one of the respective first and second support arm means for the continuous winding of additional independent widths of the web material.

5,909,857

FILIMONOV HYBRID DIRIGIBLE CRAFT

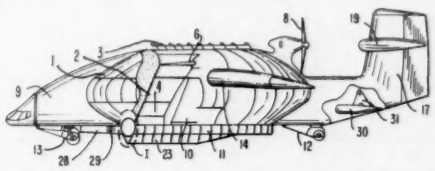
Alexandr Iosifovich Filimonov, 625010, Minscaya str. 10, ap.605, Tyumen, Russian Federation

Continuation of application No. PCT/RU96/0019961007, Oct. 7, 1996. This application Apr. 8, 1998, Appl. No. 57,216.

Claims priority, application Russian Federation, Oct. 31, 1995, 95117921

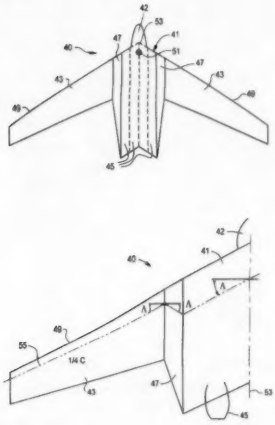
Int. Cl.[6] B64B *1/02*

U.S. Cl. 244—29 **8 Claims**



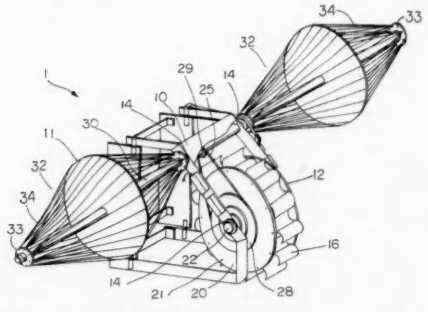
1. A hybrid dirigible craft comprising a discoid body (**1**) with a craft central passage (**2**) in which is mounted a flow-permitting body (**5**) with a rotor (**6**) on its upper part secured to the walls by radial partitions (**7**) which have an aerodynamic profile, a pilot-passenger compartment (**9**) and a cargo compartment (**10**), a propulsion unit with propellers (**8**), an inflatable toroidal bag (**11**) suspended below said craft and having a forward part and a rearward part with the bag being inflated to provide an air cushion for landing said craft and wheel-skid supports (**12** and **13**) mounted on the lower surfaces of the craft, rotating flaps (**3**) mounted at the inlet of the central passage (**2**), control and stabilizing elements (**4**) mounted at the outlet of the central passage, outer wing units (**14**) and a tail assembly with a stabilizer (**19**) and two or more fins (**17**) mounted on the rear part of the hull, airflow flaps (**21**) mounted on the rear flaps of the outer wing elements and the hull, airflow control surfaces (**15**) mounted on the stabilizer and the outer wing elements, wherein elevons (**22**) are mounted on the stabilizer and a flexible guard element (**23**) is mounted on and underneath the forward part of the toroidal bag (**11**) so that the flexible guard envelops the perimeter of the toroidal bag over at least 180 degrees thereof and has a configuration so that its height decreases from the forward part of the toroidal bag to the rearward part thereof for restricting the flow of air both forward and aside of said craft and for directing the airflow from the toroidal bag backward for the purpose of stabilizing the craft during take-off and landing.

5,909,858
SPANWISE TRANSITION SECTION FOR BLENDED WING-BODY AIRCRAFT
Arthur V. Hawley, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Jun. 19, 1997, Appl. No. 878,623
Int. Cl.[6] B64C *3/00*
U.S. Cl. 244—36 **20 Claims**



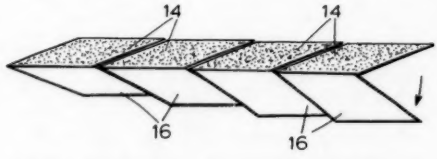
1. An aircraft, comprising:
a wing having a positive sweep angle;
a body having a positive sweep angle; and,
a transition section interconnecting the wing and the body, said transition section having a span, a chord length varying across the span, a thickness varying across said span, and a sweep angle having a negative value across said span.

5,909,859
MULTI-ROTOR KITE GLIDER
Stephen J. Janicki, 207 Railroad St. P.O. Box 208, Wakarusa, Ind. 46573
Provisional application No. 60/014,428, Mar. 28, 1996. This application Mar. 6, 1997, Appl. No. 812,684.
Int. Cl.[6] B64C *31/06*
U.S. Cl. 244—153 A **7 Claims**



1. A multi-rotor gyro kite comprising:
(a) *lift means rotatable about a central longitudinal axis for* generating vertical lift using the Magnus Effect and including at least one rotatable foil of predetermined shape and frictional coefficient,
(b) torque means mounted adjacent the lift means and rotatable about a central lateral axis for generating rotational torque from air flow over the kite, the torque means including at least one blade having a predetermined curvature to produce reciprocal lift in an air stream and hence propel the torque means about its lateral axis,
(c) transmission means connecting the lift means and torque means for transferring power from the torque means to the lift means at a variable and predetermined ratio,
(d) first control means for operating the transmission means.

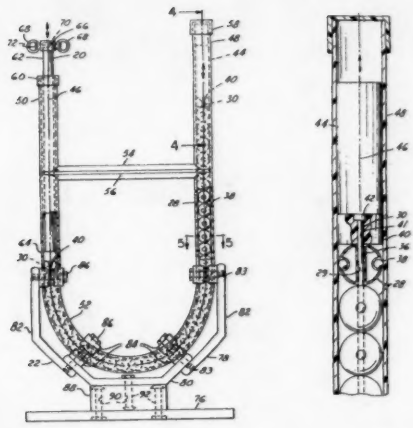
5,909,860
DEPLOYMENT SEQUENCER
Benjamin M. Lee, Monterey Park, Calif., assignor to Hughes Electronics Corporation, El Segundo, Calif.
Filed Feb. 26, 1998, Appl. No. 31,310
Int. Cl.[6] B64G *1/44*
U.S. Cl. 244—173 **13 Claims**



1. A deployment sequencer for controlling the deployment of a first reflector panel on a solar panel array, wherein a first solar panel is pivotally coupled to a second solar panel with a primary deployment hinge line about which said first and said second solar *panels pivot between a solar panel stowed position and a solar* panel deployed position, and wherein said first reflector panel is coupled to one of said first and said second solar panels and is adapted to move between a reflector panel stowed position and a reflector panel deployed position, said deployment sequencer comprising:
a first forked member mounted on said first solar panel;
a second forked member mounted on said second solar panel, said second forked member oriented in opposing relationship *with said first forked member when said first and said second* solar panels are in said solar panel stowed position and aligned with said first forked member when said first solar panel is in said solar panel deployed position; and
a retention member coupled to said first reflector panel, said retention member being captivated by said first and said second forked members when said first and said second forked members are oriented in opposing relationship, and being uncaptivated by said first and said second forked members when said first and said second forked members are aligned, whereby said first reflector panel is retained in said reflector panel stowed position until said first and said second solar panels pivot to approximately said solar panel deployed position.

5,909,861
HOSE SUPPORT WITH TELESCOPING TUBE
Albert Korson, P.O. Box 658, Suttons Bay, Mich. 49682
Filed Jul. 8, 1997, Appl. No. 889,820
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—80 **9 Claims**

1. A hose support for hoses extending from a truck tractor to a truck trailer, the hose support comprising:
a U-shaped tube having a central axis and two upwardly directed arms;
a plurality of balls disposed within the tube;
a weight slidably disposed in a first arm of the U-shaped portion acting against the balls;
a telescoping member slidably disposed in a second arm of the U-shaped tube acting against the balls;
a hose engagement feature disposed on the telescoping member; and



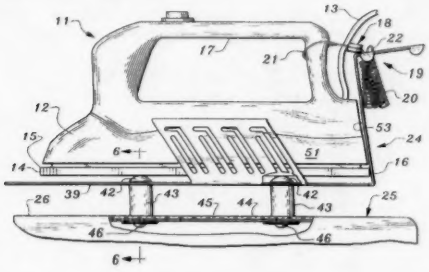
a mounting feature connected to the U-shaped tube wherein the weight acting against the balls biases the telescoping member upward.

5,909,862

COMBINED IRON, IRON HOLDER AND IRONING BOARD

Sharon L. Ratliff, 7425 Walnut Ave., Fair Oaks, Calif. 95628, and James W. Johnson, 616 Vernon Oaks Dr., Roseville, Calif. 95678

Filed Jul. 29, 1997, Appl. No. 901,866
Int. Cl.° D06F *79/02*
U.S. Cl. 248—117.4 **7 Claims**



1. In combination with an electric iron having a sole plate extending from a pointed toe end to a blunt heel end and an ironing board having an ironing surface extending from a first, tapered end to a second, butt end,

a. an iron holder comprising:

(i) a base plate similar in shape and size to the sole plate of the iron and extending from a pointed front end to a blunt rear end; and,

(ii) a plurality of heat-resistant buttons mounted on said base plate to support the sole plate of the iron when the iron is positioned in said holder;

b. means for mounting said iron holder on the ironing board with said base plate spaced from the adjacent surface of the ironing board, said mounting means including a plurality of stanchions interposed between the bottom of said base plate and *the adjacent surface of said board, and anti-theft means for* securing said stanchions to the board;

c. means for tethering the iron to said iron holder; and,

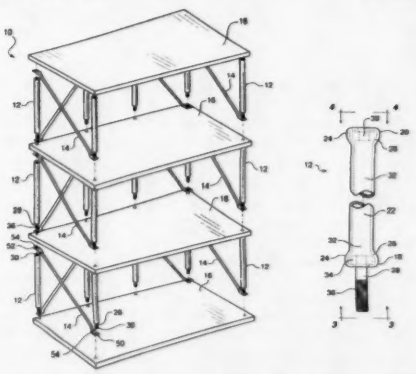
d. means associated with said iron holder for immobilizing the iron when the sole plate of the iron is supported on said buttons and the board is moved between an unfolded position in which the ironing surface is horizontal and a folded position in which the ironing surface is vertical.

5,909,863

SUPPORT TUBE, SUPPORT TUBE SURFACE AREA ASSEMBLY, AND METHOD FOR MANUFACTURE OF THE SUPPORT TUBE

Michael T. Mansfield, Mundelein, and Ronald L. Wood, Jr., Barrington, both of Ill., assignors to B & W Corporation, Bensenville, Ill.

Filed Jul. 3, 1997, Appl. No. 887,660
Int. Cl.° A47G *29/02*
U.S. Cl. 248—235 **28 Claims**



1. A support tube comprising a first end, a second end, and a body section extending therebetween, said first end and said second end each being outwardly flared at their external side periphery to provide a tapered interior area to said first end and said second end, a first accessory element set within said tapered interior area of said first end, a second accessory element set within *said tapered interior area of said second end, said first end and said* second end each terminating into an inwardly extending flange forming a retention ring to at least partially enclose said first accessory element and said second accessory element within said tapered interior area of said first end and said second end.

5,909,864

CHAIR-MOUNT ADJUSTABLE KEYBOARD SUPPORTING ASSEMBLY

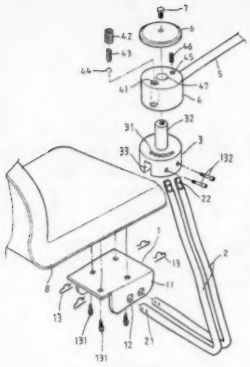
Chih Chiang Wang, Hsin Tien, Taiwan, assignor to Camel Furniture Co., Ltd., Tu Cheng, Taiwan

Filed Mar. 25, 1998, Appl. No. 47,873
Int. Cl.° A47F *5/00;* **A47C** *7/54*
U.S. Cl. 248—289.11 **2 Claims**

1. A chair-mount adjustable keyboard supporting assembly, comprising a bracket connected to a chair, a pair of extension bars, a main base, a rotating seat, a suspension arm, and an adjusting seat;

said bracket being connected to one bottom side of said chair by means of screws upward screwed into a seat bottom of said chair, two sides of said bracket parallel to the bottom side of said chair extending downward to form two side walls, two pairs of through holes being separately and correspondingly formed on said two side walls;

said two extension bars both being bent at a lower portion to form a predetermined angle, each of said extension bars *having an upper end forming a pivotal connecting head and a* lower end provided with two through holes, said extension bars extending their lower ends through said two pairs of through holes on said two side walls of said bracket and being pivotally turnably fastened to and below said bracket by retaining means;



said main base being provided with a channel which extends across a bottom of said main base for receiving said two pivotal connecting heads of said two extension bars therein, two screws being threaded from one side of said main base into said channel to extend through said pivotal connecting heads, said main base having an upward projected central shaft and an arcuate row of continuous shallow holes formed along outer periphery of said main base;

said rotating seat having an axial central through hole for receiving said central shaft of said main base therein and an axially extended first threaded hole formed at a predetermined position for an adjusting screw to thread thereinto, a spring being disposed in said first threaded hole below said adjusting screw to normally press a locating ball against and into one of said shallow holes on said main base, a second threaded hole being provided on said rotating seat diametrically opposite to said first threaded hole for a screw to thread thereinto to tightly press against said suspension arm which has one end sideward inserted into said rotating seat in a predetermined manner, and a top cover being fixed to a top of said rotating seat by a screw threaded into said central shaft of said main base, so that said rotating seat is rotatably mounted around said central shaft of said main base; and

said inclination adjusting seat being formed of a transverse arm passage for receiving another end of said suspension arm therein, an oblong adjusting opening being provided at a bottom center of said arm passage, an adjusting wheel having a threaded stem being upward extended through said oblong adjusting opening with said threaded stem screwed into a threaded hole formed on said suspension arm, whereby when said adjusting wheel is turned to tightly screw said threaded stem against said suspension arm, said inclination adjusting seat is fixedly mounted about said suspension arm at a desired inclination relative to said chair, and a keyboard supporter being connected to a top of said inclination adjusting seat by screws to hold a keyboard thereon.

5,909,865

SUPPORT FOR A PRINTED CIRCUIT BOARD WITH ELECTRONIC COMPONENTS

Hermann Stahl, Steinheim/Kleinbottwar, Germany, assignor to Hermann Stahl GmbH, Grossbottwar, Germany

Filed Nov. 21, 1997, Appl. No. 975,798

Claims priority, application Germany, Nov. 21, 1996, 196 48 205

***Int. Cl.*[6] B01D** *17/00*

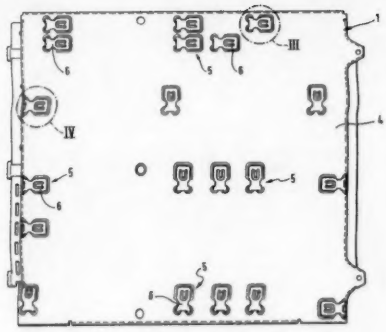
U.S. Cl. 248—346.03 **12 Claims**

1. A support having a printed circuit board positioned at a distance parallel to said support, said support comprising:

a base plate;

spacers for spacing the printed circuit from said base plate;

said spacers having a head for connecting said spacers to the printed circuit board;



said spacers having a bottom portion;

said base plate having a side facing the printed circuit board;

said base plate having fastening elements for securing each one of said bottom portions to said side;

said bottom portions being flat and parallel to said base plate;

said fastening elements having securing projections for said bottom portions;

each one of said bottom portions having at least two edges engaged by said securing projections;

said fastening elements having abutments for said bottom portions, wherein said bottom portions rest at said abutments when engaged by said securing projections.

5,909,866

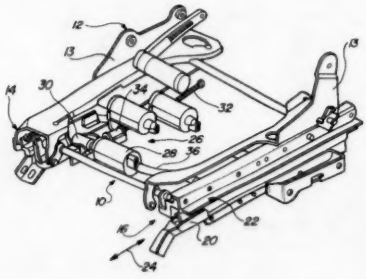
TRANSMISSION ASSEMBLY FOR VEHICLE SEAT ADJUSTER WITH MECHANICAL BRAKE TO PREVENT BACK DRIVING

Sriam Vaidyanathan, Novi; Christopher Kanuit, Battle Creek; Slavko Kocecski, Sterling Heights, all of Mich., and Sushil Shastry, Toledo, Ohio, assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Jun. 23, 1997, Appl. No. 880,593

Int. Cl.[6] **F16M** *13/00*

U.S. Cl. 248—429 **9 Claims**



1. A vehicle seat assembly comprising:

a fixed track adapted to be attached to a vehicle body;

a slide track mounted to the fixed track and movable thereon to a plurality of positions relative to the fixed track;

a nut mounted to one of the fixed and slide tracks, the nut having a threaded bore therethrough;

an elongated threaded lead screw threaded through the bore of the nut and mounted to the other of the fixed and slide tracks, the lead screw being rotatable about a lead screw axis whereby the nut is movable along the length of the lead screw;

the other of the fixed and slide tracks having a housing into which the lead screw extends to mount the lead screw thereto;

motor means having an output shaft operatively coupled to the lead screw to rotate the lead screw upon operation of the motor; and

a brake for preventing rotation of the lead screw when the housing is moved relative to the lead screw in a predetermined axial direction.

5,909,867

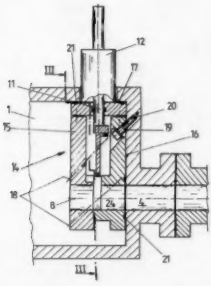
CLOSING ASSEMBLY FOR A CHAMBER HAVING A THROUGH-OPENING

Thomas Blecha, Feldkirch, Australia, assignor to VAT Holding AG, Haag, Switzerland

Filed May 27, 1998, Appl. No. 85,431

Int. Cl.*[6] *F16K 3/314

U.S. Cl. 251—328 **5 Claims**



1. A closing assembly for a chamber having a through-bore, the closing assembly comprising:

a closing plate displaceable perpendicular to an axis of the through-opening between an open position in which the through-opening remains open, and a closed position in which the closing plate sealingly closes the through-opening;

drive means for displacing the closing plate between the open and closed positions of the closing plate; and

a housing-like member in which the closing plate is displaceable;

wherein the housing-like member has two flange-like connection surfaces one of which surrounds the through opening of the chamber and which together form an angle of 90° with each other;

wherein the housing-like member has a plurality of through-bores for receiving attachment screws for securing the housing-like member in the chamber, with the axes of the through-bores extending approximately parallel to a bisectrix of the angle formed by the two connection surfaces, and

wherein the closing plate sealingly engages the one of the two connection surfaces which surrounds the through-bore in the closing position of the closing plate.

5,909,868

CARPET REMOVAL TOOL

Rodney Galella, 885A Conklin St., Farmingdale, N.Y. 11735

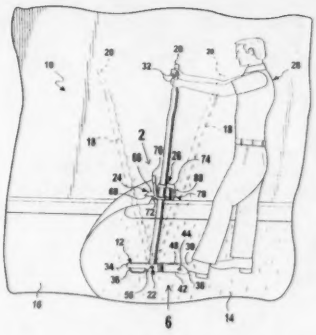
Filed Aug. 4, 1997, Appl. No. 905,851

Int. Cl.[6] **B25B** *25/00;* **B32B** *35/00*

U.S. Cl. 254—211 **16 Claims**

1. A carpet removal tool comprising:

a) a base skid to sit upon a carpet glued upon a substrate, wherein said base skid includes a Y-shaped frame having a front ski and a pair of rear skis to slide upon the carpet, a foot plate having grasping teeth extending downwardly from a bottom surface and a spring biased shaft to extend through a rear portion of said Y-shaped frame and a rear portion of said foot plate to normally keep said grasping teeth on said foot plate elevated above the carpet, so that when the person places the foot on said foot plate and presses downwardly said grasping teeth will engage with the carpet to prevent said base skid from sliding upon the carpet;



b) an elongate handle having a handgrip on a top end;

c) means for pivoting a bottom end of said elongate handle in said base skid;

d) means for gripping an edge of the carpet; and

e) means for attaching said gripping means in a height adjustable manner to said elongate handle, so that a person can stand with one foot upon said base skid, grasp said handgrip with both hands to pivot said elongate handle on said base skid and pull the carpet with said gripping means away from the substrate.

5,909,869

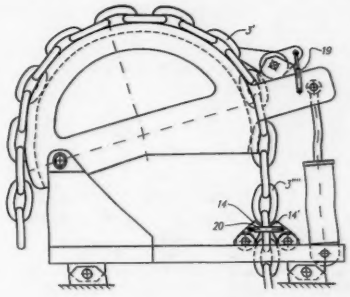
RAM WINCH

Harry Sandøy, Kolbjørnsvik, and Vidar Solstad, Fevik, both of Norway, assignors to Maritime Pusnes AS, Faervik, Norway

Filed Sep. 12, 1997, Appl. No. 927,385

Int. Cl.[6] **B66D** *1/00*

U.S. Cl. 254—264 **32 Claims**



21. A device for lifting or lowering a chain, comprising:

support structure;

a guide member pivotably mounted to the support structure for movement about a pivot axis, wherein the guide member defines a chain engagement surface spaced from the pivot axis;

an extendible and retractable actuator interconnected between the support structure and the guide member at a location spaced from the pivot axis for imparting movement to the guide member about the pivot axis in opposite directions;

a gripping arrangement operable to engage the chain with the chain engagement surface of the guide member when the actuator is operated so as to move the guide member in a first direction, resulting in movement of the chain in the first direction; and

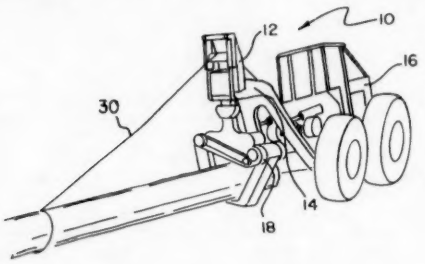
a locking arrangement operable to maintain the position of the chain relative to the guide member when the actuator is operated so as to move the guide member in a second direction opposite the first direction.

5,909,870

LOGGING TRACTOR ACCESSORY

James L. Funk, 1345 Walkers Knob Rd., Woodlawn, Va. 24381

Filed Feb. 12, 1998, Appl. No. 22,365
Int. Cl.[6] B66D *1/36*
U.S. Cl. 254—325 **10 Claims**



1. A logging tractor accessory for supporting a cable from grapple-style skidding implement comprising, in combination:

a housing secured to an arch of a logging tractor equipped with grapple-style skidding elements, the housing including a pair of upwardly extending side members disposed in a parallel relationship;

three elongate guide members including an upper guide member and a pair of side guide members, the upper guide member extending between the upper ends of the side members in a horizontal orientation, the pair of side guide members secured to leading edges of the side members;

wherein each of the side members of the housing has a tab extending outwardly from the forward edge thereof, each of the tabs being positioned towards the upper ends of the guide members, the upper guide member extending between the tabs; and

a roller secured between the side members downwardly of the horizontal support, the roller receiving a cable from the logging tractor thereover.

5,909,871

SHEET POST-PROCESSING APPARATUS

Yoshifumi Takehara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/545,056, Oct. 19, 1995, abandoned, which is a continuation of application No. 08/324,965, Oct. 18, 1994, abandoned. This application Nov. 5, 1997, Appl. No. 968,849.
Claims priority, application Japan, Oct. 19, 1993, 5-284523
Int. Cl.[6] B42B *2/00*
U.S. Cl. 270—58.07 **44 Claims**

1. A sheet post-processing apparatus comprising:

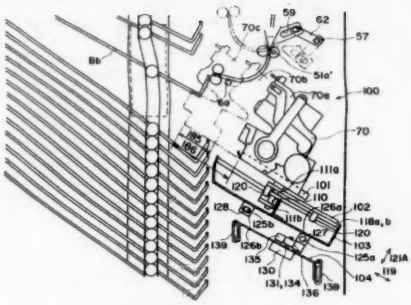
at least one sheet receiving bin for receiving sheets;

sheet discharging means for discharging sheets into said sheet receiving bins, said discharging means being provided with a path for guiding the sheet to said sheet receiving means, wherein said path has a fixed portion and a movable portion which is faced to said sheet receiving bin;

post-processing means for post-processing the sheets stored in said sheet receiving bin;

supporting means for supporting said movable portion of said sheet discharging means, for movement between a first location at a discharging location for discharging the sheets into said sheet receiving bin and a second location at a retract location away from the first location; and

moving means for moving said movable portion of said sheet discharging means from the first location to the second location when relative movement is imparted between the sheets and said post-processing means so that said post-processing means effects its post-processing operation at a predetermined location along the edges of the sheets in said sheet receiving bins.

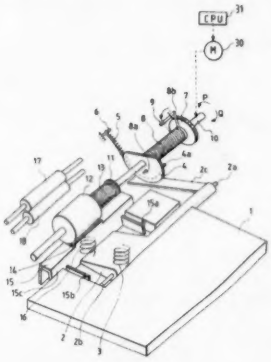


5,909,872

SHEET SUPPLYING APPARATUS WITH SHIFT AND AUXILIARY SHIFT FOR SHEET SUPPORT

Koji Takahashi, Toride, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1996, Appl. No. 697,665
Claims priority, application Japan, Aug. 28, 1995, 7-242529; Sep. 26, 1995, 7-247979
Int. Cl.[6] B65H *3/06*
U.S. Cl. 271—116 **23 Claims**



18. A sheet supplying apparatus comprising:

sheet supporting means for supporting at least one sheet;

sheet supply means for feeding out the sheet supported by said sheet supporting means;

shift means for shifting said sheet supporting means between a sheet supply position where the sheet supported by said sheet supporting means is contacted with said sheet supply means, and a waiting position where the sheet is spaced apart from said sheet supply means;

drive means generating one-way and other-way rotating forces;

clutch means for transmitting only the one-way rotating force generated by said drive means to said shift means so that said shift means shifts said sheet supporting means from said sheet supply position to said waiting position; and

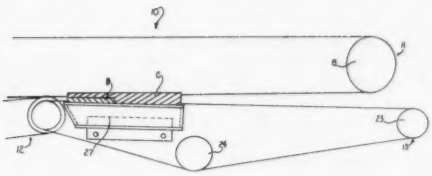
auxiliary shift means for causing said shift means to shift said sheet supporting means from said waiting position to said sheet supply position, when the other-way rotating force is generated by said drive means.

5,909,873

NON MARKING SLOW DOWN APPARATUS

Francis J. Littleton, Alden, N.Y., assignor to Littleton Industrial Consultants, Inc., Alden, N.Y.

Filed Jun. 3, 1997, Appl. No. 867,733
Int. Cl.[6] B65H *5/34*
U.S. Cl. 271—270 **26 Claims**



1. A slow-down system for a plurality of sheets delivered along a delivery path, comprising:

a) a lower high-speed conveyor having an entrance end and an exit end;

b) a low-speed conveyor having an entrance end and an exit end and adapted to convey the sheets at a low-speed less than a high-speed along the delivery path provided between the low-speed conveyor entrance end and exit end;

c) at least one upper high-speed conveyor having an entrance end and an exit end, the at least one upper high-speed conveyor positioned vertically above at least the lower high-speed conveyor;

d) at least one of the upper high-speed conveyor and the lower high-speed conveyor adapted to convey the sheets at the high-speed along the delivery path provided between the lower high-speed conveyor entrance end and exit end to the entrance end of the low-speed conveyor;

e) a suction box having at least one aperture and capable of affecting a volume above the aperture corresponding to at least twice a shingle depth determined by the distance a sheet travels on the low-speed conveyor until a next sheet is delivered to the low-speed conveyor, the suction box in corresponding relationship with the low-speed conveyor and positioned horizontally adjacent the lower high-speed conveyor exit end along the delivery path and positioned vertically such that a portion of the low-speed conveyor and delivery path above the aperture passes through the volume the suction box is capable of affecting to control at least two sheets in the shingled alignment to brake their momentum;

f) the portion of the low-speed conveyor and the delivery path above the aperture communicating with the volume above the aperture the suction box is capable of affecting being a function of the position of the sheets previously delivered from the at least one of the lower high-speed conveyor and the upper high-speed conveyor relative to the low-speed conveyor;

whereby a first sheet delivered by at least one of the upper high-speed conveyor and the lower high-speed conveyor has its marginal end portion drawn to the low-speed conveyor to temporarily close the aperture from communicating with the volume above the aperture the suction box is capable of affecting as the shingled sheets move longitudinally alone the suction box to vacate a portion of the volume the suction box is capable of affecting closest to the entrance end of the low-speed conveyor as a marginal end of a next replacement sheet is drawn toward the low-speed conveyor and the suction box and into a shingled relationship with the sheets in the shingled alignment.

5,909,874

ICOSAHEDRON DECIMAL DICE

Maurice Daniel, 3115 King St., Alexandria, Va. 22302; David J. Pristash, 12124 Parkview Rd., Brecksville, Ohio 44141, and Michael D. Miller, 9650 Jackson Rd., Mentor, Ohio 44060

Continuation-in-part of application No. 08/696,625, Aug. 14, 1996, abandoned. This application Aug. 12, 1997, Appl. No. 909,094.
Int. Cl.[6] A63F *9/04*
U.S. Cl. 273—146 **27 Claims**

1. A die of uniformly distributed material comprising:

a die body having twenty equal-sided triangular faces arranged to form an icosahedron shape with a plurality of vertexes, each of said vertexes being formed by a conversion of the sides of five triangular faces, said triangular faces being arranged such that each triangular face is spaced from a substantially parallel opposite triangular face, and

a plurality of indicia on said die body being formed on said triangular faces, said indicia being arranged in two distinct groups with the indicia in a first group being formed in a first manner and the indicia in a second group being formed in a second manner different from said first manner to visually distinguish said first group from said second group, the indicia formed on any triangular face being in a group which differs from the group which includes the indicia on the opposite substantially parallel triangular face, said plurality of indicia including numbers with the numbers in said first group duplicating the numbers in said second group, the sum of the numbers on each opposite pair of triangular faces on the die body being equal to the same number.

5,909,875

KENO GAME

Gary Weingardt, 5416 Gipsy Ave., Las Vegas, Nev. 89107

Continuation-in-part of application No. 08/569,793, Dec. 8, 1995, Pat. No. 5,727,786, and application No. 08/366,982, Dec. 29, 1994, abandoned, and application No. 08/182,850, Jan. 18, 1994, Pat. No. 5,482,289. This application Sep. 26, 1997, Appl. No. 939,077.
Int. Cl.[6] A63F *3/06*
U.S. Cl. 273—269 **13 Claims**

1. The method of playing a game of keno comprising:

a) providing a player with a keno ticket having a plurality of numbered spaces;

b) providing a plurality of keno balls each having individual numbers corresponding to the numbered spaces on the keno card;

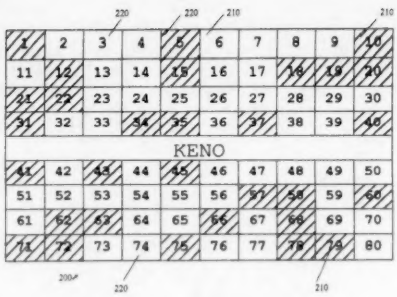
c) providing an electronic keno number reader board having a plurality of numbered spaces corresponding to the number of keno balls used in the keno game;

d) a player making a wager to be eligible for the keno game;

e) the player selecting one or more numbers on his keno ticket to be active numbers during the game;

f) randomly designating a portion of the numbered spaces on the keno board with at least a first designated marking;

g) designating the remaining numbered spaces on the keno board as a second designated marking;



h) randomly selecting a predetermined number of keno balls;

i) if the player achieves a predetermined winning combination on the keno ticket of selected numbers having only the first designated marking, awarding the player a first preselected amount.

5,909,876

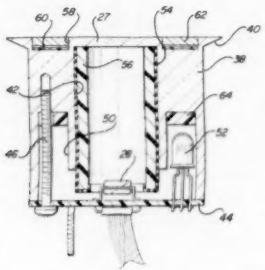
GAME MACHINE WAGER SENSOR

J. Breck Brown, Las Vegas, Nev., assignor to Steven R. Pyykkonen, Leonard, Mich., a part interest

Filed Mar. 30, 1998, Appl. No. 50,687

Int. Cl.[6] A63F *1/18;1/06*

U.S. Cl. 273—309 **15 Claims**



1. A game board for playing a game upon which wagers are made, said board comprising:

an upper playing surface (**12**) presenting a plurality of player areas, each of said player areas including first, second and third wager indicators (**20**,**22**,**24**), each of said wager indicators (**20**,**22**,**24**) including lens (**27**) substantially flush with said playing surface (**12**) sensor (**28**) for sensing the presence of a chip on said lens (**27**),

said sensor comprising a photo-cell under each said lens (**27**) and in the center thereof for sensing the presence of a chip on said lens (**27**), and a light (**30**) surrounding each of said sensors for indicating that a wager has been placed on said lens of said wager indicator (**20**,**22**,**24**), and

a light shield (**54**) having a lower end adjacent said photo cell and a upper end adjacent said lens for preventing light rays from said light from reaching said photo-cell.

5,909,877

BEAN BAG TOSS GAME TARGET

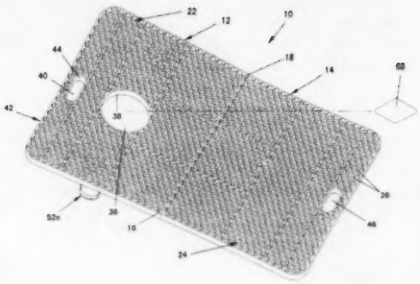
Anthony William Bour, Sioux Falls, S. Dak., assignor to Sunstream Manufacturing Inc., Sioux Falls, S. Dak.

Filed Sep. 30, 1997, Appl. No. 940,432

Int. Cl.[6] A63B *63/00*

U.S. Cl. 273—402 **20 Claims**

1. A bag tossing game target, comprising:



first and second generally planar, equally sized panels, said first and second panels connected together by a hinge whereby said first and second panels are moveable between a first, in-use configuration in which the first and second panels are coplanar, and a second, folded configuration in which the first and second panels lay back-to-back to each other;

said first panel having a hole therein, said hole being sized such that a bag can be tossed therethrough; and

at least one support leg detachably secured to said first panel whereby in the in-use configuration said first panel is supported off the ground and an end of the second panel rests upon the ground.

5,909,878

MECHANICAL FACE SEAL ASSEMBLY

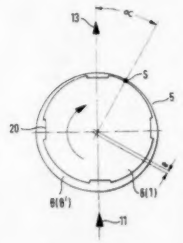
Andreas Schrüfer, Wolfratshausen; Walter Ittner; Reinhard Svejkovsky, both of Geretsried; Andreas Schöpf, Baierbrunn, and Dieter Ziegenbein, Neusäss, all of Germany, assignors to Feodor Burgmann Dichtungswerke GmbH & Co., Wolfratshausen, Germany

Filed Feb. 10, 1997, Appl. No. 797,896

Claims priority, application Germany, Feb. 15, 1996, 296 02 685 U

Int. Cl.[6] F16J *15/34*

U.S. Cl. 277—398 **8 Claims**



1. A mechanical face seal assembly for sealing a rotating member with respect to a stationary member, comprising at least a pair of cooperating annular sealing elements, in which one of said annular sealing elements is mountable in a non-rotating manner with respect to said stationary member and the other for common rotation with said rotating member, between said rotating member and said non-rotating annular sealing element an annular space being defined, the radial dimension of which varies between a region of minimum radial dimension and a region of maximum radial dimension, said regions being offset circumferentially to each other, inlet means for introducing a buffer liquid into said annular space at or adjacent said region having a maximum radial dimension, and outlet means for discharging said buffer liquid from said annular space at or adjacent the region thereof having a minimum radial dimension, wherein at least one delivery-promoting recess for promoting a flow of the buffer liquid along the annular space from the inlet to the outlet means is formed in a

portion of said rotating member, which is oriented axially to said annular space, wherein said annular space is axially extended beyond the axial dimension of said non-rotating annular sealing element.

5,909,879

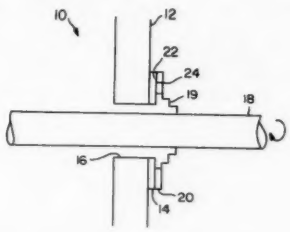
DIAMOND FILM COATING FOR MATING PARTS

Matthew A. Simpson, Arlington, Mass., assignor to Norton Company, Worcester, Mass.

Filed Mar. 9, 1993, Appl. No. 28,473

Int. Cl.[6] F16J *15/20*

U.S. Cl. 277—399 **18 Claims**



1. A mechanical member adapted to have at least a portion of its surface slidingly engaged as a wear surface by a mating surface, said member comprising:

a body having a wear surface, and

a coating of polycrystalline diamond film on the wear surface, the coating having a first, outer thickness region of a first material remote from the underlying body and a second, inner thickness region of a second material under the first thickness region, the second material having a morphology different from that of the first material.

5,909,880

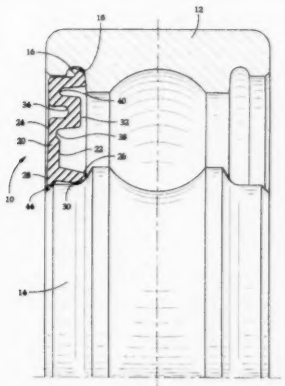
POLYMER BEARING SEAL AND SEALED BEARING

Walter P. Waskiewicz, Bristol, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Feb. 21, 1997, Appl. No. 803,212

Int. Cl.[6] F16J *15/32*

U.S. Cl. 277—561 **22 Claims**



1. A polymer bearing seal for insertion between an outer ring and an inner ring of a bearing, the seal comprising:

a polymer ring having a mounting flange along the polymer ring's outer circumference for mounting engagement with a seal groove of the outer ring of the bearing;

the polymer ring having an annular end wall extending radially inwardly and axially inwardly such that, prior to insertion of the seal into the bearing, the end wall provides a conically convex side to be directed toward an axial center of the bearing and a conically concave side to be directed away from the axial center of the bearing;

the polymer ring having an annular first seal lip projecting from a radially inner portion of the end wall for engagement with an annular radially outwardly curved surface of the inner ring of the bearing after insertion of the seal into the bearing;

the polymer ring having an annular rib located on the convex side between the end wall and the mounting flange, and an annular rib groove on the concave side opposite the annular rib, such that the polymer ring may collapse radially as the end wall is deflected axially outwardly from a conical orientation to a more radial orientation during insertion of the seal into the bearing.

5,909,881

COMPOSITION FOR SLIDING MEMBER AS WELL AS SLIDING MEMBER AND SPHERICAL ANNULAR SEAL MEMBER FORMED OF THE COMPOSITION

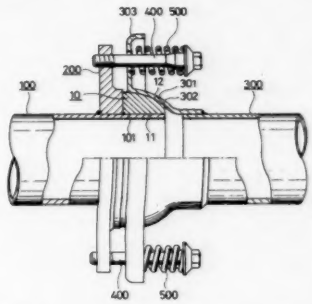
Takeo Segawa, Yamaguchi-ken, Japan, assignor to Oiles Corporation, Tokyo, Japan

Filed Mar. 20, 1997, Appl. No. 821,372

Claims priority, application Japan, Mar. 22, 1996, 8-093358

Int. Cl.[6] F16J *15/00;15/12*

U.S. Cl. 277—627 **12 Claims**



1. A spherical annular seal member for sealing a joint portion between exhaust pipes of a vehicle, said spherical annular seal member having a through hole in a central portion thereof and a partially convex spherical surface portion on an outer surface thereof, said spherical annular seal member formed by compression molding a mixture consisting essentially of from 40 to 80% by weight of steel fibers or wool chops, from 3 to 20% by weight of a borosilicate glass powder, and from 15 to 50% by weight of a graphite powder, wherein the glass powder contains boron trioxide (B_2O_3) in a portion of 40 to 70% by weight of the glass powder.

5,909,882

PNEUMATIC DRIVEN AUTOMATIC CHUCK

Albrecht Paul Schill, Stockholm, Sweden, assignor to System 3R International AB, Vallingby, Sweden

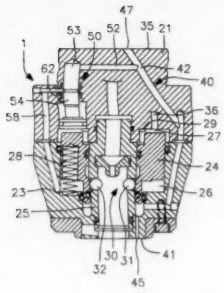
Filed Dec. 5, 1997, Appl. No. 986,239

Claims priority, application European Pat. Off., Dec. 6, 1996, 96119625

Int. Cl.[6] B23B *31/30;31/22*

U.S. Cl. 279—4.04 **10 Claims**

1. A pneumatically driven chuck for clamping and unclamping a tool holder of a machine tool, specifically an electric discharge



machine, said chuck including a mechanical clamp for clamping said tool holder, a first air chamber for receiving opening air for releasing said mechanical clamp, a second air chamber for receiving cleaning air to provide pneumatic clamping of said tool holder, and a release valve in pneumatic communication with said first and second air chambers to release cleaning air pressure from said second air chamber when opening air is provided to said first chamber.

5,909,883

NEEDLING MACHINE AND ASSOCIATED FEED CONTROL METHOD

Bernard Jourde, Elbeuf; François Louis, La Saussaye, and Robert Jean, Amfreville la Campagne, all of France, assignors to Asselin, Elbeuf, France

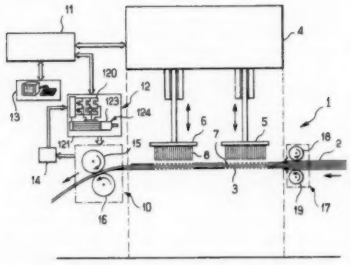
PCT No. PCT/FR96/00052, § 371 Date Aug. 11, 1997, § 102(e) Date Aug. 11, 1997, PCT Pub. No. WO96/21763, PCT Pub. Date Jul. 18, 1996

PCT Filed Jan. 12, 1996, Appl. No. 860,823

Claims priority, application France, Jan. 12, 1995, 95 00293

Int. Cl.[6] D04H *18/00*

U.S. Cl. 28—114 **14 Claims**



1. A needling machine comprising means for needling, according to a variable striking frequency, a fibre fleece generally passing between two perforated steel plates, insertion means comprising a first pair of rollers for inserting the fibre fleece between the two plates, a second pair of rollers for extracting the fibre fleece emerging from the plates, means for driving the needling means with a periodic striking motion, means for driving the extraction rollers to be synchronized with the periodic motion of the needling means and at a frequency equal to the striking frequency, said means for driving the extraction rollers comprising electromechanical means and control and processing means, said electromechanical means and said means for driving the needling means being controlled by said control and processing means, wherein said insertion means are driven for inserting the fibre fleece at an approximately constant insertion speed while said extraction rollers are driven at a speed modulated about an average extraction speed, said modulation being of variable amplitude.

5,909,884

PROCESS AND APPARATUS FOR CONTINUOUS PRODUCTION OF LENGTH PORTIONS FROM A STRAND OF FLUID-ABSORBING MATERIAL

Gerhard Schwankhart, Tuffeltsham 68, A-4800, Attnang-Puchheim, Austria

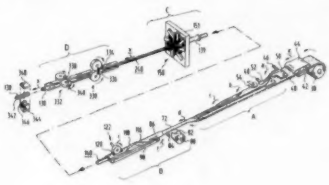
PCT No. PCT/EP96/01753, § 371 Date Jan. 14, 1998, § 102(e) Date Jan. 14, 1998, PCT Pub. No. WO96/33682, PCT Pub. Date Oct. 31, 1996

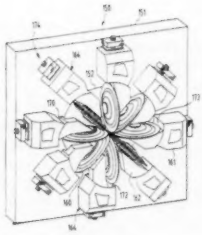
PCT Filed Apr. 26, 1996, Appl. No. 945,578

Claims priority, application Germany, Apr. 27, 1995, 19515517

Int. Cl.[6] A61F *13/20*

U.S. Cl. 28—118 **29 Claims**





1. Apparatus for the production of longitudinally extending pressed absorption bodies, having a front end and a rear end, from an endless nonwoven web comprising a carrier plate provided with a passage orifice, in which is arranged a tubular piece having a widened entry orifice and provided with a plurality of slots extending in the longitudinal direction, with a disk press having a plurality of circular press disks, an outer circumferential portion of which projects respectively through a slot into the interior of the tubular piece, the press disks being mounted rotatably on axles fastened on press-disk holders which are arranged on the carrier plate at angular spacings in a common plane perpendicular to the tubular piece and which are adjustable radially relative to the tubular piece, wherein an apparatus for forming an endless nonwoven web precedes the tubular piece, an exit orifice of which is arranged at a distance in front of a gap formed by the press disks, there being provided a drive device for synchronously driving the press disks, so that the nonwoven web can be drawn by the press disks into the press-disk gap and can simultaneously be pressed radially at least to a final diameter of a pressed strand in a single operation.

5,909,885

ENERGIZED IN-LINE ROLLER SKATE

Rene Borel, Cran-Gevrier, France, assignor to Salomon S.A., Metz-Tessy, France

Filed May 14, 1997, Appl. No. 856,184

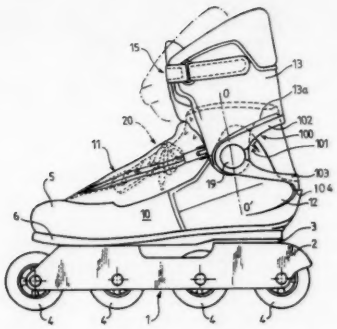
Claims priority, application France, Jun. 4, 1996, 96 07030

Int. Cl.[6] A63C *17/06*

U.S. Cl. 280—11.22 **34 Claims**

1. An in-line roller skate comprising:

a frame having an upper plate and a lower portion on which skating wheels are arranged; and



a boot comprising a sole affixed to said upper plate, an upper provided with a heel stiffener, and a rigid collar capable of supporting a user's ankle, a pivot connection pivotally connecting said rigid collar to said heel stiffener for movement of said rigid collar between a forwardmost position and a rearwardmost position, and elastic return means acting between said upper and said rigid collar;

said elastic return means being biased at least during a pivoting motion of said rigid collar toward the rear of the boot;

said boot further comprising a rear limit stop, arranged fixedly on said boot to limit rear pivoting amplitude of said rigid collar with respect to said heel stiffener, which provides a forward elastic return to said rigid collar according to an energy value proportional to angular travel of said rigid collar, within a maximal limit determined by the position of said limit stop of said rigid collar.

5,909,886

BINDING FOR SNOWBOARDS

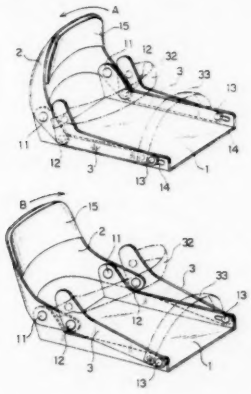
Ichikawa Tugutaka, Ota-ku, and Umemoto Satoshi, Higashitonami-gun, both of Japan, assignors to Kabushiki Kaisha Tokyo Ichizuru, Tokyo, Japan

Filed Apr. 2, 1997, Appl. No. 832,352

Claims priority, application Japan, Apr. 8, 1996, 8-110552

Int. Cl.[6] B62B *9/04*

U.S. Cl. 280—14.2 **5 Claims**



1. A binding for snowboards comprising a base plate, a back plate positioned at the rear of the base plate, and side plates which are positioned on both sides of the base plate and provided with an ankle strap and a toe strap; said side plates being movable vertically by moving the back plate back and forth.

5,909,887

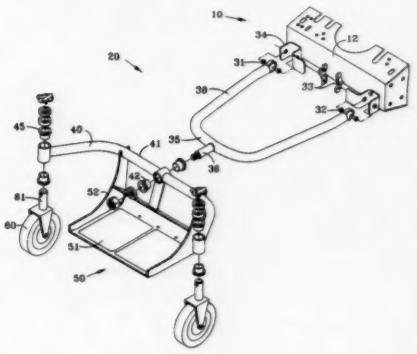
MOWER SULKY

Gerald Hobrath, Brunswick, Ohio, assignor to MTD Products Inc, Valley City, Ohio

Continuation of application No. 08/176,249, Jan. 4, 1994, abandoned. This application Nov. 26, 1996, Appl. No. 756,541.

Int. Cl.[6] B62D *63/00*

U.S. Cl. 280—32.7 **6 Claims**



1. A sulky for use with an associated self-propelled apparatus having a frame, said sulky comprising:

a sulky frame;

a sulky stand supported by said sulky frame;

a wheel connected to said sulky frame to support said sulky frame and said sulky stand for travel; and,

a pivot frame for connecting said sulky stand to the frame, said pivot frame having first and second ball ends receivable by first and second brackets for connection to the apparatus frame, said first ball end being detachably connected to said first bracket by a first removable pin disposed through said first ball end and said first bracket, said second ball end being detachably connected to said second bracket by a second removable pin disposed through said second ball end and said second bracket, said pivot frame being vertically pivotable about said first removable pin in said first bracket and said second removable pin in said second bracket, said pivot frame further having a pin extending longitudinally backwards off a back end of said pivot frame, said pin being receivable by a hole in said sulky frame, said pin being supported in said hole in said sulky frame by a bearing, said sulky frame being rotatably connected to said pivot frame by said pin.

5,909,888

TWIST-BEAM REAR AXLE FOR MOTOR VEHICLES

Christian Betz, Bergisch-Gladbach, and Tong Zhang, Pulheim, both of Germany, assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Feb. 26, 1998, Appl. No. 30,878

Claims priority, application Germany, Feb. 26, 1997, 197 07 643

Int. Cl.[6] B60G *11/18*

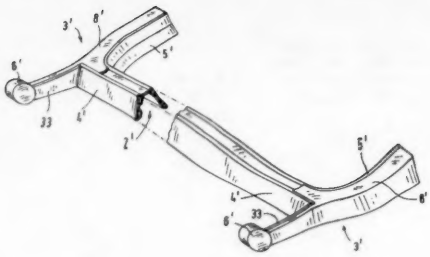
U.S. Cl. 280—124.166 **5 Claims**

1. A twist-beam rear axle for motor vehicles, comprising:

a flexurally stiff but torsionally compliant cross strut having connected, at each of its ends, flexurally and torsionally stiff longitudinal arms having a shaped member which carries an axle coupling and a hub carrier;

said cross strut being constructed from a single extruded channel having a cross section and properties selected to position a roll center of the twist beam rear axle;

said cross section having an open-bottom U-shape with sides having closed ends at each end of a base and free ends



opposite said closed ends, said free ends, closed ends and said base each having separate closed chambers formed therein;

said sides of said cross section being vertically oriented in a non-parallel, diverging relationship, thereby increase warping resistance of said section;

said sides, at said ends of said cross strut, further being separated and bent apart outwards to form portions of said longitudinal arms which are connected to shaped members; and

said closed chambers being independently selectable in size and shape to adjust a torsional constant of said cross strut.

5,909,889

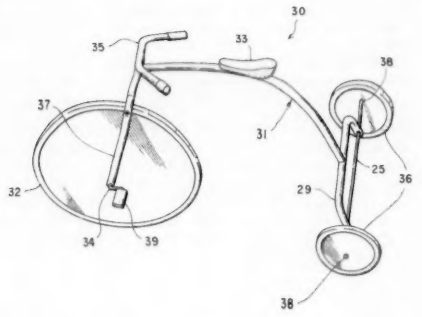
VEHICLES HAVING DIFFERENT-SIZED WHEELS AND HUB ECCENTRICITIES

Warren H. Larson, 3450 Brunswick Ave. South, St. Louis Park, Minn. 55416

Filed Jun. 13, 1997, Appl. No. 874,853

Int. Cl.[6] B62K *17/00*

U.S. Cl. 280—229 **3 Claims**



1. A cycle comprising:

a frame having a rear axle;

a first wheel having a center and a diameter, said first wheel including a first axle hub offset by a first offset distance from the center of said first wheel, said first axle hub mounted to said frame;

a second wheel having a center and a diameter, said second wheel including a second axle hub offset by a second offset distance from the center of said second wheel, said second axle hub mounted to said frame;

a third wheel having a center and a diameter, said third wheel including a third axle hub offset by a third offset distance from the center of said third wheel, said third wheel mounted to said frame, said second axle hub and said third axle hub both mounted to said rear axle *180 degrees out of phase relative to* each other, wherein the diameter of said first wheel is unequal to the diameter of said second wheel and the diameter of said third wheel, and the first offset distance is unequal to the second offset distance and the third offset distance.

5,909,890

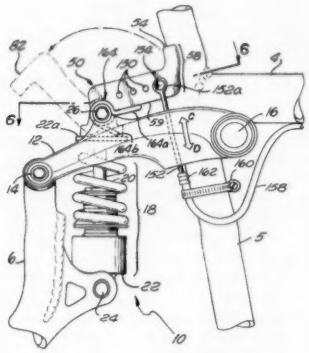
DEVICE FOR LOCKING AND UNLOCKING BICYCLE SUSPENSION SYSTEMS

Gregory D. Sachs, 27400 Pacific Coast Highway, Malibu, Calif. 90265; Richard K. Freshman, 4132 South Rainbow, No. 173, Las Vegas, Nev. 89103, and Thomas J. Griffith, 20715 Dearborn St., Chatsworth, Calif. 91311

Filed Sep. *11, 1996, Appl. No. 712,299*

Int. Cl.[6] B62K *25/20*

U.S. Cl. 280—284 **6 Claims**



1. In a bicycle having a main frame, a wheel support frame pivotally attached to said main frame by a swing arm, and a suspension system coupled to said swing arm and said wheel support frame, a device for inhibiting the operation of said suspension system comprising:

a body having a first end and a second end, said first end being pivotally attached to said swing arm and said second end having a flange being detachably engaged to said main frame, such that when said second end of said body is engaged with said main frame, movement of said swing arm is substantially restricted.

5,909,891

REAR-MOUNTED TOW HITCH FOR CONNECTING A TOWING VEHICLE ELECTRICAL SYSTEM TO AN ELECTRICAL SYSTEM OF A TOWED VEHICLE *TRAILER, OR THE LIKE*

Alan Charles Swart, and Alen Paul Butler, both of Mooi River, South Africa, assignors to Tow-Go USA, L.L.C., Shreveport, La.

Filed Mar. 13, 1997, Appl. No. 816,689

Claims priority, application South Africa, Jul. 22, 1996, 96/6182

Int. Cl.[6] B60D *1/62*

U.S. Cl. 280—422 **20 Claims**

1. *A rear mounted tow hitch, comprising:*

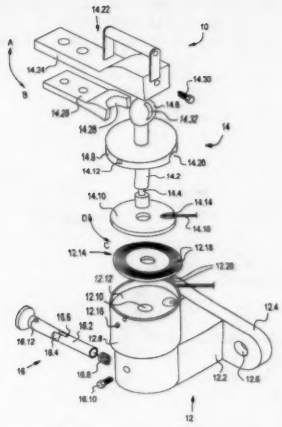
a) a body having a support drum, a circular recess in an upper surface of the support drum;

b) a plurality of electrical contacts within said circular recess;

c) a drum cover member sized to cover said recess, said drum cover member having an upward extension with a universal ball extending from an upper surface of said drum cover member, said drum cover member having a plurality of upper electrical contacts for contacting said electrical contacts within said circular recess;

d) said drum cover member having a downward extension which extends below an upper surface of said support drum;

e) a lock which releasably engages said downward extension of said drum cover member, whereby said drum cover member



can be unlocked and removed and said upper and lower electrical contacts can be accessed.

5,909,892

SELF-ALIGNING TRAILER HITCH ARRANGEMENT

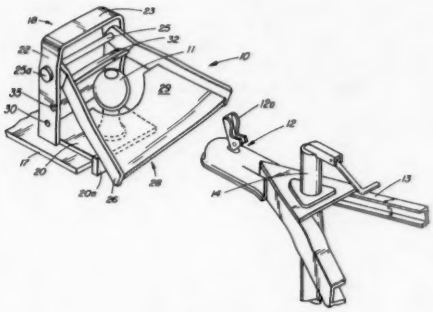
Ronald Harold Richardson, R.R.#4, Merrickville, Ontario, Canada, K0G 1N0

Filed Mar. 21, 1997, Appl. No. 823,310

Claims priority, application Canada, Feb. 6, 1997, 2196967

Int. Cl.[6] B60D *13/00*

U.S. Cl. 280—477 **10 Claims**



1. A self aligning hitch arrangement for attachment to the drawbar of a towing vehicle, and suitable for lifting and aligning a trailer tongue in place on a towing ball member mounted on the drawbar, comprising:

mounting means attachable to the drawbar for supporting a horizontal transverse pivot in front of the ball member,

a ramp member pivotally supported by said transverse pivot, said ramp member including a plate having a front edge spaced behind said ball member,

said ramp member being pivotable between a raised position in which the plate lies at a suitable angle to provide a ramp capable of lifting the trailer tongue to a level at which it fits over the ball member, and a lowered position in which the plate lies at an angle steeper than said suitable angle, said plate being arranged so that in said lowered position it allows the tongue to engage the ball member,

guide means positioned beside said plate and diverging rearwardly away from opposite lateral sides of the ball member to guide the trailer tongue laterally into position over the ball member as the towing vehicle backs towards the trailer tongue,

the hitch arrangement also including a latch carried by said mounting means, said latch having retaining means for holding the ramp member in its raised position, said latch also having an abutment surface positioned to be moved by the *tongue as the tongue becomes located over the ball member,* this movement of the latch causing the latch retaining means to release the ramp member and allowing this to fall to its lowered position and the tongue to engage the ball member.

5,909,893

RETAINING APPARATUS FOR SECURING BINDINGS ON SNOWBOARDS OR THE LIKE

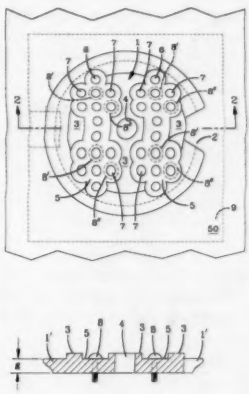
Alexander Keller, Unterammergau, and Edwin Lehner, Farchant, both of Germany, assignors to Marker Deutschland GmbH, Eschenlohe, Germany

Filed Jan. 31, 1997, Appl. No. 792,883

Claims priority, application Germany, Feb. 2, 1996, 196 03 522

Int. Cl.[6] A63C *9/00*

U.S. Cl. 280—607 **11 Claims**



1. A retaining part for securing bindings on snowboards, having holes for receiving fasteners to be inserted into predetermined mounts on the snowboard, for holding said retaining part on the snowboard, *said holes forming such a pattern for fixing said* retaining part on the snowboard in different positions relative to the mounts, said pattern of holes having at least one long row of holes, *and parallel, shorter rows of holes arranged beside said long row of* holes, wherein the pattern of holes enables a two-dimensional adjustment of said retaining part in two mutually perpendicular directions which are approximately parallel to the upper side of the snowboard.

5,909,894

SNOWBOARD BINDING

Allen L. Meader, Port Ochard, and Geoffrey E. Rittmeyer, Vashon, both of Wash., assignors to K-2 Corporation, Vashon, Wash.

Filed Jan. 2, 1997, Appl. No. 778,289

Int. Cl.[6] A63C *9/10*

U.S. Cl. 280—623 **19 Claims**

1. A snowboard binding for securing a snowboard boot to a snowboard comprising:

(a) a rigid baseplate having a releasable fastener attached thereto for releasably securing the boot to the baseplate, said base-

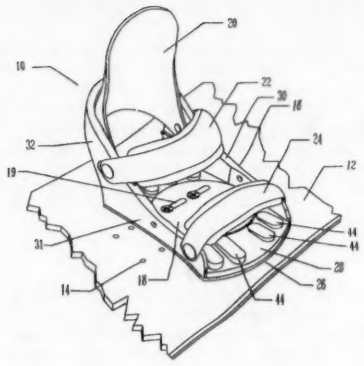


plate being adapted for attachment to the snowboard, said baseplate to be positioned between the snowboard and the boot, said baseplate having a top surface and including a first aperture extending therethrough; and

(b) a substantially elastic isolation member extending beneath said baseplate and positioned between said baseplate and said snowboard, said isolation member including a first upward projection having a lower portion extending through said first aperture and an upper portion projecting above at least a portion of the top surface of the baseplate for supportingly engaging with the bottom surface of the boot, the upper portion of the first upward projection being compressible by the boot for reducing shock and vibration while at least partially isolating the boot from the top surface of the baseplate.

5,909,895

THERMOPLASTIC RESIN FILM AIR BAG

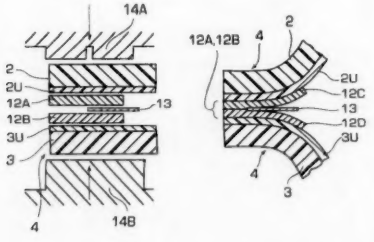
Yasuhiro Iino, Yokohama, and Yosuke Matsushima, Sagamihara, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jun. 10, 1997, Appl. No. 872,153

Claims priority, application Japan, Jun. 11, 1996, 8-148848

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—743.1 **7 Claims**



1. An air bag comprising: a facing sheet and a backing sheet each made from a thermoplastic resin film and laminated on at least a joining region thereof at outer peripheral portions with a thermoplastic resin film, at least one adhesion reinforcing layer interposed between the facing sheet and the backing sheet at the joining region and made from a thermoplastic resin, and an insulating layer interposed proximate the adhesion reinforcing layer at a region ranging from a position corresponding to an approximate center of the joining region toward the inside thereof, the facing and backing sheets and the adhesion reinforcing layer being heat-welded together at the joining region.

5,909,896

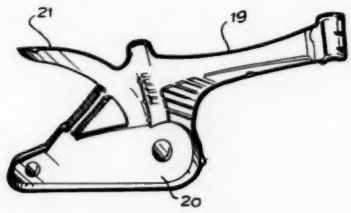
BICYCLE FOR CHILDREN WITH STREAMLINED PLASTIC HOUSING

Valerio Accerenzi, Bassano Bresciano, Italy, assignor to Yakari S.r.l., Verolanuovba, Italy

Filed Feb. 3, 1997, Appl. No. 794,307

Int. Cl.[6] B62J *17/00*

U.S. Cl. 280—828 ***14 Claims***



1. A childrens' bicycle comprising:

a frame;

a front and rear wheel attached to said frame;

a chain drive system for driving said rear wheel;

a fairing housing made of plastic and enclosing said frame and said chain drive system, said housing being formed of only first and second shells joined and fixed in a complementary manner, said first shell including a mudguard portion and said second shell including a mudguard portion, said first shell mudguard portion and said second shell mudguard portion cooperating to form a mudguard, said first shell including a chain guard portion and said second shell including a chain guard portion, said first shell chain guard portion and said second shell chain guard portion cooperating to form a chain guard provided on each side of said frame.

5,909,897

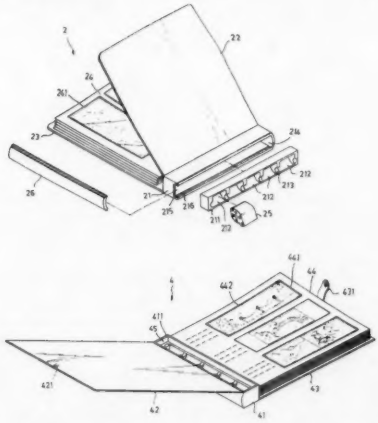
PHOTO ALBUM FOR STORING PICTURES AND APS FILM CARTRIDGES

Tsung-Tai Lu, No. 499, Chiu-Ju-Erh Rd., San-Min Dist-.,Kaohsiung City, Taiwan

Filed Aug. 19, 1997, Appl. No. 914,864

Int. Cl.[6] B42D *1/08*

U.S. Cl. 281—22 **9 Claims**



1. A photo album for storing pictures and APS film cartridges, comprising:

a binder shaft which has a receiving space therein for receiving the APS film cartridges, and an opening communicated with said receiving space for passage of the APS film cartridges;

top and bottom cover sheets;

a plurality of picture holding sheets which are sandwiched between said top and bottom cover sheets;

said top and bottom cover sheets and said picture holding sheets having connecting edge portions which are hinged to said binder shaft; and

a cover for closing said opening of said binder shaft.

5,909,898

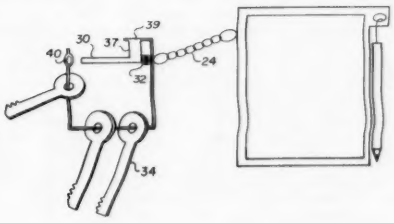
NOTEPAD WITH PEN AND KEY HOLDER

Abdul-Razzak Faraj, P.O. Box 566068, Atlanta, Ga. 31156

Filed Oct. 14, 1997, Appl. No. 950,340

Int. Cl.[6] B42D *3/00*

U.S. Cl. 281—30 **3 Claims**



1. An apparatus, comprising:

a notepad having a top binder portion with first and second end portions;

a holder for holding a writing instrument attached to said first end portion of said top binder portion;

a flexible strap having one end connected to said second end portion of said top binder portion and having a distal end; and

a key holder attached to said distal end of said flexible strap and having a U-shaped frame with a push bar biased with a spring, said spring biasing said push bar to a closed position closing off an open end of the U to retain a key on said push bar, said push bar being moveable to an open position to remove the key from said push bar.

5,909,899

METHODS OF FOLDING OUTSERTS

Joseph M. Vijuk, 403 Royal Glen Ct., Oak Brook, Ill. 60521, and Robert Vijuk, 1061 Robey Ave., Downers Grove, Ill. 60516

Continuation of application No. 08/492,213, Jun. 19, 1995, Pat. No. 5,813,700, and a continuation-in-part of application No. 08/264,181, Jun. 22, 1994, Pat. No. 5,458,374, which is a continuation of application No. 08/037,294, Mar. 26, 1993, said application No. 08/492,213 is a continuation-in-part of application No. 08/324,350, Oct. 17, 1994, abandoned, which is a continuation-in-part of application No. 08/264,181, which is a continuation of application No. 08/037,294. This application Feb. 26, 1998, Appl. No. 31,191.

This patent is subject to a terminal disclaimer

Int. Cl.[6] B42D *15/04;15/00*

U.S. Cl. 283—81 **10 Claims**

1. A method of folding a sheet having printed information thereon for use in the formation of an outsert for providing information to the user of a product, said method comprising the steps of:

(a) folding said sheet by making a plurality of first folds to form a first folded article, said first folds being parallel to each other and parallel to a first direction, said first folds being accordion-type folds;

(b) folding said first folded article in half by making a second fold in the middle of said first folded article to form a second folded article, said second fold being parallel to a second direction, said second direction being perpendicular to said first direction, said second folded article having a first end and a second end, said first end having no unfolded exterior sheet edges;

(c) folding said second folded article by making a third fold to form a third folded article, said third fold being parallel to said second direction and being made so that said second end of said second folded article is disposed between said first end of said second folded article and said third fold, said third folded article having a planar portion disposed between said second end of said second folded article and said third fold;

(d) folding said planar portion of said third folded article in half by making a fourth fold to form a fourth folded article, said fourth fold being parallel to said second direction and being made so that said third fold substantially coincides with said second end of said second folded article, said fourth folded article having a planar portion disposed between said third fold and said fourth fold;

(e) depositing an adhesive on said planar portion of said fourth folded article; and

(f) folding said fourth folded article by making a fifth fold to form a fifth folded article, said fifth fold being parallel to said second direction and being made so that said first end of said second folded article substantially coincides with said fourth fold and so that said fifth folded article has no unfolded exterior sheet edges which lie in a direction parallel to said second direction.

5,909,900

MENSTRUATION RECORDING DEVICE

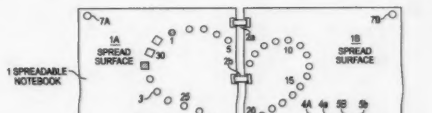
Shiomi Fujiwara, 11-12, Noke 1-chome, Setagaya-ku, Tokyo, Japan

Filed Oct. 14, 1997, Appl. No. 950,261

Claims priority, application Japan, Dec. 27, 1996, 8-349640

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—115 **9 Claims**



1. A menstruation recording device comprising:

a spreadable notebook;

a plurality of date indicating portions arranged around the spread surfaces, which can be used in every month of the year;

at least two sets of marker supporting portions provided separately from the plurality of the date indicating portions; and

at least two sets and four kinds of removable markers to be arranged on the date indicating portions or the two sets of the marker supporting portions, for arrangement on the two sets

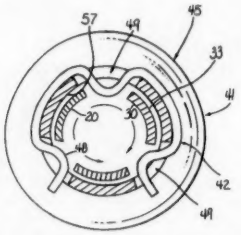
of the marker supporting portions not in use, and on dates of the date indicating portions corresponding to the current menstruation date and the ovulation date preceding the current menstruation date or the menstruation finishing date, and the next menstruation date and the ovulation date preceding the next menstruation date or the next menstruation finishing date in use.

5,909,901

DISCONNECT TOOL FOR A FLUID LINE QUICK-CONNECT ASSEMBLY

Steven R. Zillig, Clarence, and James E. Caroll, Clarence Center, both of N.Y., assignors to Jiffy-Tite Company, Inc., Lancaster, N.Y.

Filed Feb. 22, 1998, Appl. No. 30,513
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—38 **12 Claims**



1. A disconnect tool for disengaging a fluid line from a fluid coupling assembly, said fluid line having a shoulder portion and said coupling assembly having a retaining clip and a clip-receiving groove, said retaining clip having a plurality of protrusions, said groove having a plurality of slots for receiving said protrusions, such that said protrusions extend through said slots to engage said shoulder portion thus locking said fluid line to said coupling assembly, the improvement comprising:

engagement means for engaging said fluid line; and

expansion means for expanding said retaining clip such that each of said protrusions are disposed radially outwardly through each of said slots;

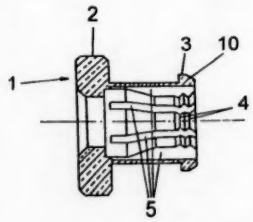
whereby said fluid line may be selectively removed from said coupling assembly.

5,909,902

INSERT FOR LOCKING A TUBE IN A CONNECTION BODY

Helio Lanfranchi Seabra, Sao Paulo, Brazil, assignor to Metalurgica Detroit S.A., Diadema, Brazil

Continuation of application No. 08/306,888, Sep. 16, 1994, abandoned. This application Jan. 31, 1997, Appl. No. 791,904.
Claims priority, application Brazil, Mar. 24, 1994, 7400587 U
Int. Cl.[6] F16L *21/06*
U.S. Cl. 285—322 **1 Claim**



1. An insert for locking a tube in a connection body, said insert comprising:

a tubular body having two ends,

an internal ring relief located at one of said two ends,

a front ring relief located at the other of said two ends,

a plurality of slots equally spaced about and extending longitudinally along said tubular body from said internal ring relief of said one end of said tubular body all the way up to the front ring relief at the other end of said tubular body to form a plurality of stems anchored from the front ring relief and being free at said internal ring relief, each of said slots defining two tapering surfaces on said stems transitioning from an interior surface of said tubular body to parallel extending sidewalls leading to an exterior surface of said tubular body, the exterior surface of said tubular body located between said internal ring relief and said front ring relief being continuously cylindrically shaped except for the plurality of slots extending between the internal ring relief and the front ring relief,

said stems defining an axially extending passageway including a radially inwardly tapering internal surface portion of said tubular body initiating at said front ring relief with a first portion extending parallel to a longitudinal axis of said tubular body, leading to a radially inwardly tapering second portion and progressively extending towards said internal ring relief and terminating in a third portion extending parallel to said longitudinal axis so that said stems are thinner in a radial direction adjacent to said front ring relief at said first portion than at said internal ring relief as said stems extend progressively towards said internal ring relief located at said third portion,

an internal surface of said tubular body at said first portion being spaced radially outwardly with respect to a surface of said axial passageway at said front ring relief so that the stems anchored at said front ring relief are flexibily moved about the anchoring of said stems at said front ring relief during passage therethrough of a tube for engagement by the surface of the axial passageway at the front ring relief and the third portion of the tubular body.

only two rows of teeth located on an internal surface of said tubular body at said third portion being positioned at an opposite end of said third portion from said second portion and adjacent to said internal ring relief of said tubular body and adjacent to each other,

respective opposed sidewalls of substantially equal length of said two rows of teeth intersecting with each other to form a V-shaped recess therebetween, and

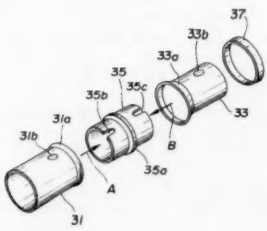
a bevelled edge located on an external surface of said stems at said internal ring relief, said bevelled edge being flat, extending transverse to the longitudinal axis of the tubular body, and extending radially outwardly in a direction from said internal ring relief towards said front ring relief.

5,909,903

COUPLING STRUCTURE FOR COUPLING TWO PIPES

Yoichi Takahashi, Kanagawa, and Eizo Suyama, Tokyo, both of Japan, assignors to Calsonic Corporation, Tokyo, Japan

Filed Mar. 20, 1997, Appl. No. 821,776
Claims priority, application Japan, Mar. 21, 1996, 8-064527
Int. Cl.[6] F16L *21/00*
U.S. Cl. 285—330 **6 Claims**



1. A coupling structure, comprising:

first and second metal pipes which are aligned and each respectively have a diametrically enlarged end portion with respec-

tive leading ends abutting each other, the abutted enlarged end portions being formed with rounded outer surfaces;

a metal collar member concentrically disposed within the abutted enlarged end portions of the pipes, said collar member being formed, around an axially middle portion thereof, with an annular ridge which is substantially entirely in contact with inner surfaces of said abutted enlarged end portions;

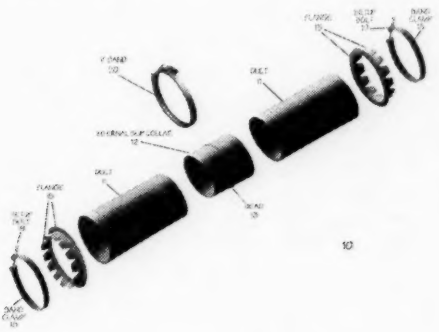
a metal fastening ring concentrically disposed about the abutted enlarged end portions of the pipes, said fastening ring being subject to one of pressing and rolling processes to be shaped to have a concave inner surface which substantially entirely contacts said rounded outer surfaces of said abutted enlarged end portions of the pipes; and

a rotation stopper for suppressing relative rotation between said collar member and each of said first and second metal pipes, said rotation stopper including an inwardly projected boss on each of said first and second metal pipes, and a notch formed in each axial end of said collar member, wherein each of said notches accommodated therein one of said bosses.

5,909,904
FLANGE JOINT ASSEMBLIES

Lawrence E. Shea, Reno, Nev., assignor to Shea Technology, Reno, Nev.

Filed Jul. 24, 1998, Appl. No. 122,334
Int. Cl.[6] F16L *33/00*
U.S. Cl. 285—405 **8 Claims**



1. A flange joint assembly for connecting together, end to end, two opposing cylindrical duct sections having interior and exterior walls, comprising

a tubular slip collar having a projecting bead encircling its exterior surface thereby dividing its exterior surface into two opposing exterior portions,

two metal flange ring clamps, each ring clamp having a plurality of notched flange leaf elements extending outwardly from a flat ring base,

two band clamps, each band clamp having an annular ring and tightening means,

whereby the tubular collar's exterior portions are mountable within the duct sections interior walls and having the projecting bead engaging the duct sections end walls,

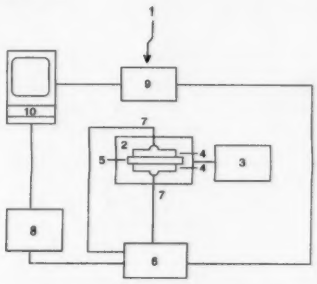
the two flange ring clamps are mountable around the the duct sections having the flat ring bases engaging the projecting bead and the notched leaf elements engaging the exterior duct surfaces, and

the two band clamps annular rings mountable around the notched leaf elements secured by the tightening means thereto.

5,909,905
METHOD OF MAKING THERMALLY STABLE, PIEZOELECTRIC AND PROELECTRIC POLYMERIC SUBSTRATES

Joycelyn O. Simpson, Hampton, and Terry L. St. Clair, Poquoson, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of application No. 08/524,855, Sep. 7, 1995. This application Aug. 30, 1996, Appl. No. 706,122.
Int. Cl.[6] H01L *41/22*
U.S. Cl. 29—25.35 **14 Claims**



1. A process for preparing a thermally stable, piezoelectric and pyroelectric polymeric substrate, the process comprising:

a) providing a polymeric substrate having a softening temperature greater than about 100° C.;

b) depositing a metal electrode material onto the polymeric substrate to form a metal electrode coated polymeric substrate;

c) attaching a plurality of electrical leads to the metal electrode coated polymeric substrate;

d) heating the metal electrode coated polymeric substrate in a low dielectric medium to about the softening temperature of the polymeric substrate;

e) applying a voltage to the heated metal electrode coated polymeric substrate to induce polarization wherein the voltage is less than the voltage wherein dielectric breakdown occurs in the metal electrode coated polymeric substrate; and

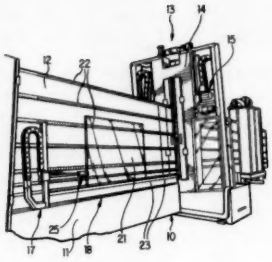
f) cooling the polarized metal electrode coated polymeric substrate to a temperature below the softening temperature of the polymer while maintaining a constant voltage.

5,909,906
GLASS PLATE AUTOMATIC DRILLING AND MILLING MACHINE

Francesco Bortolini, Miane, Italy, assignor to Intermac S.R.L., Pesaro, Italy

PCT No. PCT/EP96/04060, § 371 Date Apr. 24, 1997, § 102(e) Date Apr. 24, 1997, PCT Pub. No. WO97/10914, PCT Pub. Date Mar. 27, 1997
PCT Filed Sep. 13, 1996, Appl. No. 817,732
Claims priority, application Italy, Sep. 19, 1995, TV95A0109
Int. Cl.[6] B23B *39/00*
U.S. Cl. 29—26 A **8 Claims**

1. A machine for automatically drilling and milling glass plates comprising a loading and an unloading area, a support structure (**10**) provided with a plurality of rotating rollers (**23**,**24**) for supporting the glass plates and transporting the glass plates from said loading area to said unloading area, by passing through drilling means controlled by control means, said drilling means controlled by control means being capable of setting and controlling the drilling of openings of different shape and size, the machine further comprising tipping means (**19**) and cleaning means (**20**) for the glass plates, said tipping means receiving the glass plates positioned in a horizontal direction and tipping them on a vertical direction so as to arrange them on the drilling and milling machine, said cleaning means cleaning said glass plates at the end of the



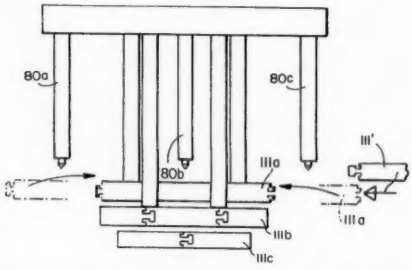
drilling of openings of different shape and size wherein said support structure (**10**) is shaped in a manner to house and transport the glass plates arranged on a vertical or slightly inclined position, the machine also comprising grasping means (**25**) for clasping said glass plates (**21**) loaded on the machine and arranged by said tipping means onto the drilling and milling machine, and transporting them through said drilling means (**29**, **30**, **31**) and means (**32**) for milling the openings onto said glass plates, said milling means (**32**) interacting with said drilling means.

5,909,907

MACHINE FOR AUTOMATICALLY MANUFACTURING PUZZLE-LOCK COMPRESSION RINGS

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen - und Apparatefabrik, Horgen, Switzerland

Filed Mar. 21, 1997, Appl. No. 822,919
Int. Cl.[6] B23P *19/00;* **B21D** *51/00*
U.S. Cl. 29—33 R **30 Claims**



1. A machine for automatically manufacturing compression rings from flat blanks provided with complementary mechanical connecting means at the free ends thereof,

which comprises, at a deformation station, core-like means having several external surface means corresponding to several successive positions in an axial direction substantially transverse to the longitudinal direction of a blank,

a plurality of slide members for deforming the blank, each slide member having several band-engaging end surface means at the free ends thereof corresponding in number to the number of positions on said core means,

actuating means for actuating said slide members in predetermined sequence during an operation cycle,

first feed means for feeding a flat blank in said axial direction to a first position corresponding to the first position on said core means in which the blank is predeformed and

second feed means for feeding a predetermined blank in said axial direction from the first position to a second position corresponding to the second position on said core means in which the blank is deformed into substantially final form after said puzzle-lock connecting means are closed,

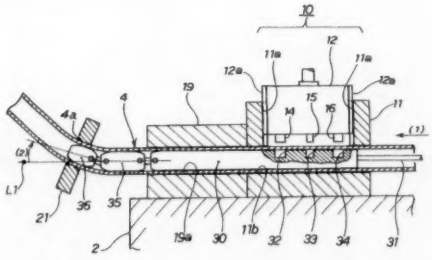
wherein said slide members include at least one lower slide member reciprocable upwardly toward said core-like means, at least two lateral slide members reciprocable from substantially opposite sides toward said core-like means, and at least one upper slide member reciprocable downwardly toward said core-like means, further comprising means for holding the blank in predetermined position relative to the core-like means during all operating cycles by applying holding pressure on the blank within the area of said at least one lower slide member, wherein said holding means is operable to apply a lesser pressure during operating periods of said feed means and a higher pressure during periods of deformation by said slide members.

5,909,908

COMBINED PROCESSING APPARATUS

Yoshinobu Furuse, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1997, Appl. No. 931,441
Claims priority, application Japan, Oct. 16, 1996, 8-273764
Int. Cl.[6] B23P *23/04*
U.S. Cl. 29—33 T **6 Claims**



1. A combined processing apparatus for bending a hollow material as a workpiece and punching the hollow material, said combined processing apparatus comprising:

a core bar having at least one recessed portion formed on one surface thereof, said core bar capable of being inserted into said hollow material;

a punching mechanism, having a punching device in correspondence to said recessed portion, for punching a hole in said hollow material by entering a front end portion of said punching device into said recessed portion;

at least one tilting core bar mounted to a front end of said core bar, said at least one tilting core bar capable of freely tilting; and

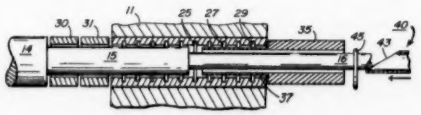
a bending mechanism for bending the hollow material about said tilting core bar to thereby continuously perform a punching process and a bending process to said hollow material.

5,909,909

SYSTEM FOR INSTALLING O-RING

Carl J. Glauber, 5825 Invincible Dr., Jamesville, N.Y. 13078

Filed Sep. 8, 1997, Appl. No. 925,246
Int. Cl.[6] B23P *19/02*
U.S. Cl. 29—235 **3 Claims**



1. Apparatus for inserting O-rings into axially spaced annular grooves in a cylindrical cavity, including:

a cylinder for insertion to a limited extent into said cavity from one end thereof, and an axial rod extending from said cylinder through said cavity;

a sleeve for insertion to a limited extent into said cavity from the other end thereof;

means to selectively position said cylinder and said sleeve relative to said cavity whereby said cylinder and said sleeve cover all but one of said annular grooves within said cavity leaving one annular groove exposed; and

a tube for insertion into said sleeve and over said rod to push an O-ring along said rod and into said one of said annular grooves left exposed by said central cylinder and said sleeve.

5,909,910

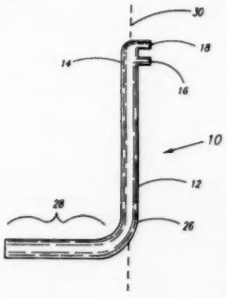
TOOL FOR ATTACHING AND REMOVING T-POST CLIPS

Danny Craig Shaffer, Rt. 2, Box 455, Perkins, Okla. 74059

Filed May 28, 1998, Appl. No. 86,318

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—243.56 **4 Claims**



1. A tool for attaching and removing t-post clips comprising

a straight bar having a first end and an opposite second end, a longitudinal axis of the bar extending between the two opposite ends, and

two spaced apart teeth provided on said first end of the bar so that the teeth attach to the bar along the longitudinal axis, said teeth attaching directly to said bar, said teeth being approximately parallel to each other along their entire length, said teeth extending outward from the bar approximately perpendicular to the longitudinal axis, and said teeth separated from each other a sufficient distance to admit an end of a t-post clip to be removably received therebetween.

5,909,911

DEVICE FOR STABILIZING A DISASSEMBLY DEVICE DURING USE

James A. Long, 1741 Howell Rd., Hillsboro, Tenn. 37342

Filed May 2, 1996, Appl. No. 644,058

Int. Cl.[6] B23P *19/04*

U.S. Cl. 29—259 **12 Claims**

1. A combination comprising:

a disassembly device; and

a stabilizing device for stabilizing said disassembly device;

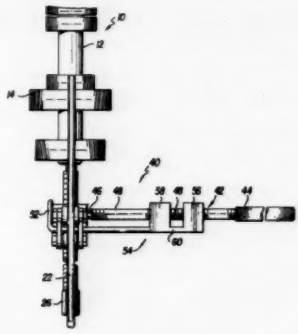
said disassembly device having a plurality of engaging members for engaging an assembly and a cross member interconnecting said engaging members; and

said stabilizing device comprising:

a main shaft having a handle at one end and an abutting head at another end;

a base element having a bore for receiving said main shaft so as to mount said base element on said main shaft; and

finger means connected to said base element and extending in a direction away from said handle for gripping said cross member to stabilize said disassembly device;



wherein said base element comprises an upper block engaged with said main shaft at a point nearest said handle, a lower block engaged with said main shaft at a point nearest said finger means, and a joining block interconnecting said upper block and said lower block and connected to said finger means.

5,909,912

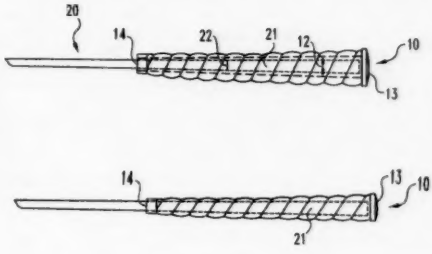
METHODS FOR INSTALLING A GOLF CLUB GRIP ONTO A GOLF CLUB SHAFT

Bernard K. Mueller, Booneville, Ark., assignor to Sealwrap Systems LLC, Indianapolis, Ind.

Filed Sep. 22, 1997, Appl. No. 934,956

Int. Cl.[6] B23P *11/02*

U.S. Cl. 29—446 **34 Claims**



9. A method for attaching a preformed elastomeric sports grip directly onto a grip-receiving portion of a piece of sports equipment, comprising:

providing a piece of sports equipment comprising a grip-receiving portion, the grip-receiving portion having predetermined outside dimensions;

providing a generally tubular elastomeric sports grip having a substantially open first end; the first end thereby providing access to a grip recess formed to receive the grip-receiving portion; the recess having inside dimensions at least as large as the outside dimensions of the grip-receiving portion; wherein the elastomeric grip has absorbed therein a liquid swelling solvent;

positioning the grip to have an orientation with respect to the grip-receiving portion whereby the grip-receiving portion resides in the recess; and

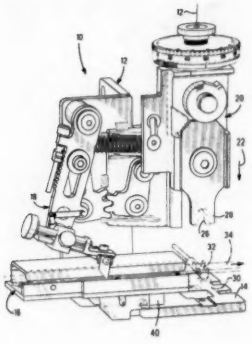
maintaining the orientation for a period of time which enables the solvent to evaporate from the grip, the evaporating causing the grip to contract, thereby causing the grip to come into intimate contact with the grip-receiving portion and to become attached to the grip-receiving portion by friction between the grip and the grip-receiving portion.

5,909,913

SHUT HEIGHT ADJUSTMENT MECHANISM FOR A TERMINAL APPLICATOR

Charles Edwin Fitz, Jr., Harrisburg; Marlin Robert Schollenberger, Myerstown, and Kenneth Foster Folk, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 19, 1996, Appl. No. 718,167
Int. Cl.[6] H01R *43/048;* **B21J** *13/02*
U.S. Cl. 29—753 **22 Claims**



1. In a terminal applicator for attaching a terminal to a wire, said applicator having a base, a tooling ram coupled to said base arranged to undergo reciprocating motion along a tooling ram axis in a first direction toward said base and in a second direction away from said base, said tooling ram being coupled to and driven by a press ram wherein said press ram and said tooling ram are in a first spaced relationship during said movement in said first direction, including lower tooling attached to said base, a terminal barrel crimping bar coupled to said tooling ram, and an insulation tab crimping bar coupled to said tooling ram in a second spaced relationship to said terminal barrel crimping bar during said movement in said first direction, wherein said first spaced relationship defines a first shut height between said terminal barrel crimping bar and said lower tooling and said second spaced relationship defines a second shut height between said insulation tab crimping bar and said lower tooling,

a shut height adjusting mechanism for selectively adjusting both said first shut height and said second shut height comprising:

(1) a first adjusting member including first and second ramp members having opposing ramp faces in mating engagement, said first ramp member being attached to said tooling ram and stationary with respect thereto and said second ramp member being rotationally coupled to said tooling ram for selected rotation about a first axis so that said selected rotation changes said first spaced relationship; and

(2) a second adjusting member rotationally coupled to said tooling ram and arranged for angular movement about a second axis perpendicular to said first axis wherein said angular movement changes said second spaced relationship.

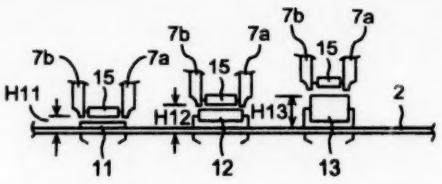
5,909,914

ELECTRONIC PARTS MOUNTING METHOD

Kiyoshi Imai; Hideaki Watanabe, and Dai Yokoyama, all of Kofu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jan. 27, 1997, Appl. No. 788,830
Claims priority, application Japan, Jan. 26, 1996, 8-012263
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—837 **2 Claims**

1. In an electronic parts mounting method comprising the steps of arranging an insert head section and an anvil section at an upper position and a lower position of a substrate respectively in such a manner as to sandwich the substrate therebetween, moving an XY table while retaining the substrate, successively positioning a plurality of insert holes provided in said substrate to parts insert positions, supplying an electronic part equipped with lead wires having front ends to the insert head section vertically moving reciprocally at said parts insert positions, lowering said insert head while holding said electronic part, bending downward and inserting the lead wires of said electronic part held at said insert parts position into at least two of said plurality of insert holes, and bending the front ends of said lead wires inward by raising said anvil section vertically and moving reciprocally with said insert head at said parts insert positions,



the improvement comprising:

previously storing data on every electronic part to be mounted in a control section;

comparing the height of the electronic part mounted on the substrate in the preceding step with the heights of the electronic parts to be mounted successively;

renewing the data on the highest electronic part each time an electronic part is mounted;

comparing each distance of the insert head section and the anvil section from the substrate with the height of the highest electronic part among the mounted ones;

maintaining and updating an interlock condition for preventing every mounted electronic part from coming into contact with the insert head section or the anvil section; and

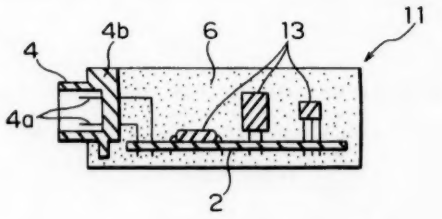
moving said XY table.

5,909,915

RESIN-MOLDED ELECTRONIC CIRCUIT DEVICE

Hiroshi Okuda, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/266,775, Jun. 29, 1994, abandoned. This application May 16, 1996, Appl. No. 648,869.
Claims priority, application Japan, Jul. 5, 1993, 5-165675
Int. Cl.[6] H05K *3/30;1/11;* **H01R** *23/68*
U.S. Cl. 29—841 **4 Claims**



1. A resin-molded electronic circuit device, comprising:

an electronic circuit substrate having electronic components mounted thereon, said substrate and at least one of said components having metal portions to conduct electric current; and

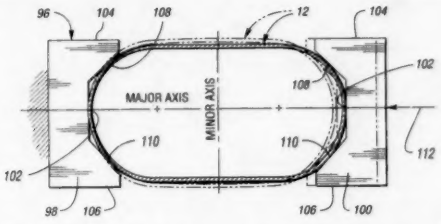
protection resin means molded to cover said electronic components and said electronic circuit substrate and having a coefficient of thermal expansion substantially equal to the coefficient of thermal expansion of said metal portions, for covering and sealing said electronic components and said substrate and for expanding and contracting according to temperature changes along with said metal portions.

5,909,916

METHOD OF MAKING A CATALYTIC CONVERTER

Michael Ralph Foster, Columbiaville; Gerald Leroy Vaneman, Grand Blanc; Jesse Allan Heather, Swartz Creek; Dana Michael Serrels, Davison, and David Kwo-Shyong Chen, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 17, 1997, Appl. No. 932,713
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890 **9 Claims**



1. A method of manufacturing a catalytic converter structure for the treatment of the exhaust gases of an internal combustion engine and which includes a housing having an oval-shaped catalyst coated substrate mounted therein with its outer surface provided with a sheet of flexible material, said method comprising the steps of:

forming a sheet of metal into an oval-shaped housing that terminates at each end with an oval-shaped peripheral edge defining an oval opening located in a plane extending transversely to the longitudinal center axis of said housing and dimensioned so when said substrate alone is centrally located within said oval opening the gap between the inside surface of said housing and the outside surface of said substrate along the minor axis of said oval opening is less than the gap between the inside surface of said housing and the outside surface of said substrate along the major axis of said oval opening,

applying a force to said housing so that the inside surfaces of said housing along said minor axis increase in distance and cause the inside surfaces of said housing along said major axis to decrease in distance so as to provide a temporarily deformed oval cavity within said housing,

placing said sheet of flexible material on the body of said substrate to cover the latter and provide a substrate-flexible material assembly,

inserting said substrate-flexible material assembly into said deformed oval cavity within said housing,

relieving said force so as to cause said inside surfaces of said housing along said minor axis and along said major axis to spring back toward their original positions and provide a desired pressure to said sheet of flexible material along said minor axis and said major axis, and

securing an end member to said oval-shaped peripheral edge at each end of said housing whereby said desired pressure along said minor axis and said major axis is maintained.

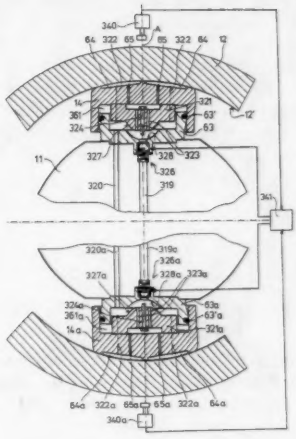
5,909,917

METHOD FOR PROVIDING A ROLL MANTLE OF A TUBULAR ROLL FOR A PAPER MACHINE OR EQUIVALENT WITH GLIDE BEARINGS

Pekka Kivioja, and Esa Salavamäki, both of Muurame, Finland, assignors to Valmet Corporation, Helsinki, Finland

Division of application No. 08/411,439, Mar. 27, 1995, Pat. No. 5,685,813. This application Jul. 14, 1997, Appl. No. 892,424.
Claims priority, application Finland, Feb. 22, 1995, 950814
This patent is subject to a terminal disclaimer
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—895.2 **5 Claims**

1. A method for arranging glide bearing elements in a tubular roll mantle of a roll for a paper machine, wherein the roll mantle is supported on a stationary roll axle by glide bearing elements acting upon the roll mantle under hydraulic pressure provided by a first



pressure medium, and the roll is loaded radially in a principal loading plane, comprising the steps of:

arranging at least a pair of said glide bearing elements to support the roll in opposite radial directions in said principal loading plane and allow the roll mantle to move a preset radial distance in said principal direction to an extreme position, and

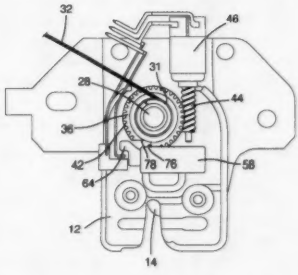
braking the movement of the roll mantle as the roll mantle approaches said extreme position and stopping the movement of the roll mantle when the roll mantle is in said extreme position by controlling the flow of a second pressure medium into said pair of glide bearing elements.

5,909,918

VALET BLOCK OUT FOR DECK LID LATCH

Thomas Joseph Kowalewski, Rochester Hills; Matthew John Karl, Clarkston; Thomas Grzanka, Lexington; Robert Milne, Sterling Heights; Eric Michael Fischer, Davisburg, and Vasanth Suratkal, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1997, Appl. No. 883,659
Int. Cl.[6] E05C *3/06*
U.S. Cl. 292—199 **2 Claims**



1. In a vehicle having a luggage compartment lid openable upon release of a latch via rotation of a latch release shaft, the improvement comprising:

a pinion gear connected with the release shaft for rotating the release shaft to release the latch, said pinion gear having a periphery with gear teeth disposed on only a portion of the periphery and a cutout on the non-toothed portion of the periphery for defining an abutment against which a blocking member engages to block rotation of the pinion gear;

an electric motor having an associated gear meshing with the pinion gear and energizable to rotate the pinion gear and release shaft;

the blocking member slidably mounted on the latch and movable between a normal disengaged position permitting rotation of the pinion gear and a blocking position in which the blocking member engages the abutment of the pinion gear to block rotation thereof by the electric motor.

5,909,919

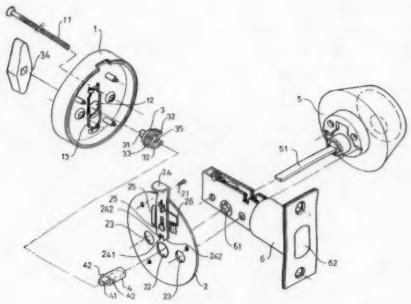
AUXILIARY LOCK ASSEMBLY WITH ADDITIONAL INTERIOR LOCKING

Jen-Feng Wang, Kaohsiung Hsien, Taiwan, assignor to Taiwan Fu Hsing Industry Co., Ltd., Kaohsiung Hsien, Taiwan

Filed Oct. 7, 1997, Appl. No. 946,251

Int. Cl.[6] E05B *55/04*

U.S. Cl. 292—359 **7 Claims**



1. An auxiliary lock assembly mounted to an inner side of a door plate, the auxiliary lock assembly comprising:

a casing securely attached to the inner side of the door plate and including a first hole;

a mount plate securely attached to the casing and including a second hole in alignment with the first hole;

a latch plate mounted on the mount plate and movable in a direction toward and away from the second hole, the latch plate having a first end extending beyond the casing and a second end inside the casing;

an actuating piece which is rotated between a lock position and an unlock position by an exterior locking assembly from an outer side of the door plate;

an engaging wheel rotatably received in the second hole of the mount plate, connected to the actuating piece for rotation therewith, and releasably engageable with the second end of the latch plate;

an actuating wheel rotatably received in the first hole of the casing, the actuating wheel being rotatable to a position to engage with the engaging wheel to rotate therewith;

a switch button mounted outside the casing and securely attached to the actuating wheel to rotate therewith;

whereby when the auxiliary lock assembly is in the lock position, turning the actuating piece to the unlock position from the outer side of the door plate is prevented by the second end of the latch plate being engaged with the engaging wheel;

and wherein the latch plate and actuating wheel have means for moving the latch plate to an unlocked position by rotation of the switch button.

5,909,920

ANCHOR PLATE

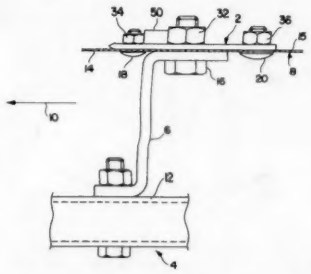
Nicholas Dalinkiewicz, St. Albans, Australia, assignor to Telstra Corporation Limited, Melbourne, Australia

Filed Jun. 8, 1995, Appl. No. 488,610

Claims priority, application Australia, Jun. 9, 1994, PM6184/94

Int. Cl.[6] B60R *21/02*

U.S. Cl. 296—24.1 ***15 Claims***



1. A load restraint system for vehicles comprising an anchor plate mounted on the outside of an inner vehicle body panel, said plate including an elongate member having first, second and third holes aligned on the plate, said second hole being disposed between said first and third holes, and closer to the first hole than the third hole, and said first hole being directed to the front of the vehicle and the third hole being directed to the rear of the vehicle, a load carrying frame, and a load securing bracket which is affixed at one end to the load carrying frame and affixed at the other end to the inside of said inner vehicle body panel by fixing means inserted into said second hole of the anchor plate.

5,909,921

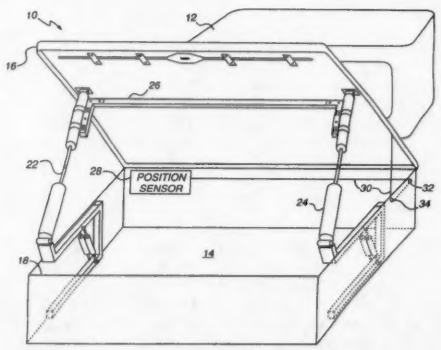
LIFT DEVICE AND SYSTEM FOR A PICK-UP TRUCK CARGO COVER

Roleto E. Nesbeth, 2910 SE. 8th Ave., Cape Coral, Fla. 33904

Filed Apr. 11, 1997, Appl. No. 835,958

Int. Cl.[6] B60P *7/02*

U.S. Cl. 296—100.1 **20 Claims**



1. A lift device, comprising:

a first member;

a second member having a first end pivotally-connected to said first member and having a second end;

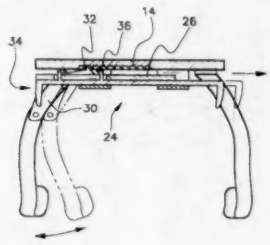
a first expansion device having a first end connected to said first member and having a second end connected to said second member; and

a second expansion device having a first end connected to said second end of said second member and having a second end.

5,909,922
CHAIR ARM-MOUNTED RESTING SURFACE FOR A COMPUTER PERIPHERAL

John E. Dugas, 8064 Olivia Dr., Denham Springs, La. 70726

Filed Jan. 29, 1998, Appl. No. 15,105
Int. Cl.[6] A47C 7/62
U.S. Cl. 297—188.18 7 Claims



1. A resting surface attachable to a chair arm for supporting a computer peripheral comprising, in combination:

a top resting plate having a planar square configuration with a top face, a bottom face and a periphery formed therebetween, the bottom face having a plurality of linearly aligned ratchet teeth extending along a central extent thereof, a pair of guides situated along side edges of the ratchet teeth adjacent opposite ends thereof, each guide being defined by a pair of L-shaped members depending from the top resting plate;

two fixed legs each having an arcuate configuration, a bottom end having a rectangular pad mounted thereon, and a top end fixed on opposite sides of the top resting plate adjacent to a common end;

two pivoting legs each having an arcuate configuration, a bottom end having a rectangular pad mounted thereon, and a top end pivotally coupled on opposite sides of the top resting plate adjacent to a common end wherein the pads of the pivoting legs are adapted to be pivoted toward and away from the pads of the fixed legs;

a leg clamping assembly including a thin rectangular strip slidably situated within the guides wherein the strip slides between both the fixed and pivoting legs, the strip having a first end and a second end with a pair of arms extending downwardly therefrom and each pivotally coupled to an intermediate extent of an associated one of the pivoting legs such that the strip of the leg clamping assembly moves with the pads of the pivoting legs, a top face of the strip having a spring biased tab extending upwardly therefrom for engaging the ratchet teeth of the top resting plate for maintaining the pads of the pivoting legs in the proximity of the pads of the fixed legs; and

an unlocking assembly including a thin rectangular strip slidably situated within the guides below the strip of the leg clamping assembly wherein the strip slides between both the fixed and pivoting legs, the strip having a first end with a gripping lip depending downwardly therefrom adjacent an end of the top resting plate opposite that of the strip of the leg clamping assembly, a top face of the strip of the unlocking assembly having a bevel block extending upwardly therefrom and through a slot formed in the strip of the leg clamping assembly for disengaging the spring biased tab from the ratchet teeth when slid outward.

5,909,923
CHAIR WITH NOVEL PIVOT MOUNTS AND METHOD OF ASSEMBLY

Larry DeKraker, Holland, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Oct. 24, 1997, Appl. No. 957,548
Int. Cl.[6] A47C 3/00
U.S. Cl. 297—285 20 Claims

19. A chair comprising:

a base assembly including side arms;

a back frame having end sections pivoted to the side arms at back pivots for rotation about a back-tilt axis, the back frame

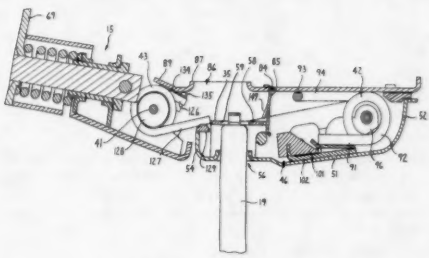
being flexible enough to permit the end sections to be flexed apart during assembly, the end sections and the side arms having adjacent faces, one of which has a frustoconically-shaped recess therein; and

a bearing arrangement at each back pivot pivotally connecting the side arms to the respective end sections, the bearing arrangement including a stud that extends into a large end of the recess, and a bearing element rotatably engaging the stud, the bearing element being removable from the recess through the large end of the recess, but held therein in part by the proximity of the adjacent faces and by the strength of the back frame.

5,909,924
TILT CONTROL FOR CHAIR

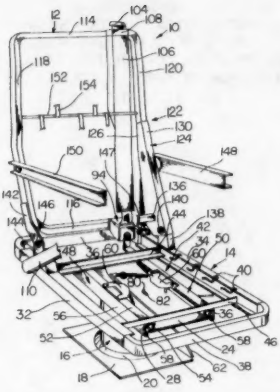
Richard N. Roslund, Jr., Georgetown Township, Ottawa County, Mich., assignor to Haworth, Inc., Holland, Mich.

Filed Apr. 30, 1997, Appl. No. 846,618
Int. Cl.[6] A47C 1/024
U.S. Cl. 297—300.4 25 Claims



1. In a chair having a base, a seat assembly and a tilt control mechanism which is supported on said base and permits rearward tilting of said seat assembly in response to a user, said tilt control mechanism including a fixed body supported on said base and a pivot member which pivots downwardly relative to said fixed body about a sidewardly extending horizontal pivot axis in response to said rearward tilting of said seat assembly, said tilt control mechanism further including a spring having a first leg portion acting on said fixed body and a second leg portion acting on said pivot member such that said spring defines a spring force acting on said pivot member, said second leg portion being resiliently deflectable relative to said first leg portion so as to act against but permit

pivoting of said pivot member about said pivot axis and bias said pivot member to counteract said rearward tilting of said seat assembly, the improvement comprising an adjustment mechanism for adjusting a deflection of said first leg portion relative to said second leg portion, said adjustment mechanism including a tension adjustment member which is movable sidewardly relative to said fixed body, and a wedge which is slidable toward and away from said spring in an axial direction transverse to sideward movement of said adjustment member, said wedge having an inclined surface which faces toward said spring, and one of said first and second leg portions being slidable axially along said inclined surface as said wedge is moved axially to effect vertical movement of said one of said first and second leg portions, said adjustment mechanism further including connector means for transferring said sideward movement of said adjustment member into axial movement of said wedge to move said one of said first and second leg portions vertically to vary the spring force.



5,909,925

ROCKER STOOL WITH CONTACT MEANS CENTRALLY ARRANGED BELOW THE SEAT

Josef Glockl, Ammerseestrasse 6, 85551 Kirchheim, Germany

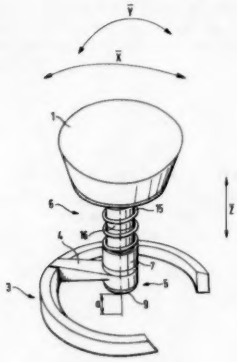
PCT No. PCT/EP96/00376, § 371 Date Aug. 5, 1997, § 102(e) Date Aug. 5, 1997, PCT Pub. No. WO96/24274, PCT Pub. Date Aug. 15, 1996

PCT Filed Jan. 30, 1996, Appl. No. 875,815

Claims priority, application Germany, Feb. 8, 1995, 195 04 121

Int. Cl.[6] A47C *1/02*

U.S. Cl. 297—314 **30 Claims**



1. A rocking stool comprising:

a seat surface;

a support structure having a base means; and

contact means which can be brought into pressing contact with the floor when the rocking stool is loaded, said contact means being arranged substantially centrally beneath the seat surface and serving as a support means in the rocking movement, the contact means remaining in a perpendicular position in the rocking movement of the stool.

5,909,926

VEHICLE SEATING ASSEMBLY

Jose Gonzalez, Cerritos, Calif., assignor to Hi-Tech Seating Products, Inc., South Gate, Calif.

Filed Sep. 4, 1996, Appl. No. 707,795

Int. Cl.[6] B60N *2/02*

U.S. Cl. 297—354.12 **9 Claims**

1. Vehicle seating assembly comprising a seat frame member supporting a back frame member, said back frame member including a pair of opposite side frame members and a pair of opposite end frame members interconnecting said side frame members, one of said side frame members including a channel section and a locking recliner spring connected between the channel section and the seat frame member, said seat frame member including a pair of opposite side frame members, a pair of opposite end frame members, and a support assembly supporting said seat frame member, means mounting said back frame member on said seat frame member between said support assembly and one of said end frame members, a seat belt retractor, a bracket securing said seat belt retractor to said support assembly, said seat frame member being supported on a pedestal by said support assembly, said support assembly including a cross frame member and rails extending transverse to said cross frame member supported by said pedestal, and a gusset plate between one of said rails and said cross frame member, said bracket being secured to said gusset plate.

5,909,927

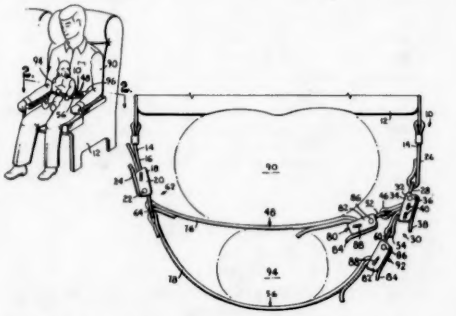
AIRPLANE PASSENGER AND LAP CHILD RESTRAINT SYSTEM

Charles A. Henshall, 1204 Lawrence Ave., Lawrence, Kans. 66049-4431

Filed Apr. 10, 1998, Appl. No. 58,640

Int. Cl.[6] A47D *15/00;* **A62B** *35/00;* **B60R** *22/12*

U.S. Cl. 297—468 **14 Claims**



14. An airplane passenger restraint system adapted to cooperate with an existing seat belt of an airplane seat where the seat belt has two straps which are releasably coupled together, the system comprising:

a first dual strap assembly adapted to be coupled to one of the straps of the seat belt, the first strap assembly having a first section of a first passenger strap and a first section of a second passenger strap, said first sections of said first and second

passenger straps each having a first part of a coupling mechanism attached thereto;

a second dual strap assembly adapted to be coupled to the other of the straps of the seat belt, the second strap assembly having a second section of a first passenger strap and a second section of a second passenger strap, said second sections of said first and second passenger straps each having a second part of a coupling mechanism attached thereto which is adapted to be coupled to said first parts of said coupling mechanism;

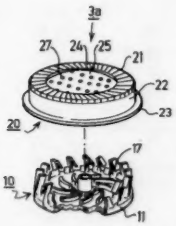
wherein said first dual strap assembly is adapted to be coupled to one of the straps of the seat belt and the second dual strap assembly adapted to be coupled to the other of the straps of the seat belt, and said first and second sections of said first passenger strap are adapted to be coupled across a first passenger and said first and second sections of said second passenger strap adapted to be coupled across a second passenger to secure both the first and the second passenger within the airplane seat.

5,909,928

ELECTRICAL HAIR REMOVER DEVICE AND METHOD

Benjamin J. Barish, 36 Yehuda Hanasi Str. Ramat Aviv, Tel Aviv, Israel, 69206

Filed Oct. 16, 1997, Appl. No. 951,645
Int. Cl.[6] B26B *19/00*
U.S. Cl. 30—41.5 **20 Claims**



1. An electrical hair remover device, comprising: a housing including an electrical motor; and a hair remover head driven by said electrical motor for removing hair from a surface over which the hair remover head is moved; characterized in that:

said hair remover head includes a static guard having a face to be pressed against the surface from which the hair is to be removed as the remover head is moved over said surface;

said face of the static guard is formed with a plurality of openings therethrough;

and said remover head further includes an air impeller driven by said electrical motor for discharging air through said openings such as to produce an air cushion between said face of the static guard and said surface, and thereby to reduce friction therebetween during the movement of said hair remover head over said surface.

5,909,929

SUPPORTING BRACKET FOR A MIDDLE CUTTER OF A SHAVER

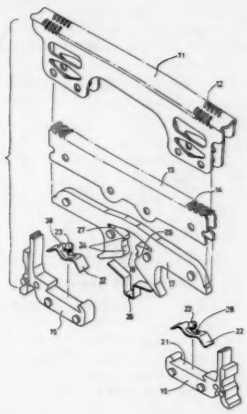
Chin-Chuan Chen, No. 25, Alley 53, Lane 514, Chung-Cheng Rd., Hsin-Chuang City, Taipei Hsien, Taiwan

Filed Jul. 30, 1997, Appl. No. 903,416
Int. Cl.[6] B26B *19/02;19/28*
U.S. Cl. 30—43.92 **12 Claims**

7. A middle cutter of a shaver, comprising:

a comb having an upper surface that includes a plurality of openings defined therein;

a first comb mount on which the comb is mounted, wherein the first comb mount includes: (a) a first retaining groove defined at an upper surface of the first comb mount, and (b) hookers for engaging the first comb mount with the comb;



a second comb mount on which the comb is mounted, wherein the second comb mount includes: (a) a second retaining groove defined at an upper surface of the second comb mount, and (b) hookers for engaging the second comb mount with the comb;

a cutter in tight contact with an inner surface of the comb, wherein an upper surface of the cutter is provided with a plurality of cutting grooves;

a cutter mount on which the cutter is mounted;

a first spring plate retained in the first retaining groove of the first comb mount;

a second spring plate retained in the second retaining groove of the second comb mount;

a first ball movably received on the first spring plate; and

a second ball movably received on the second spring plate;

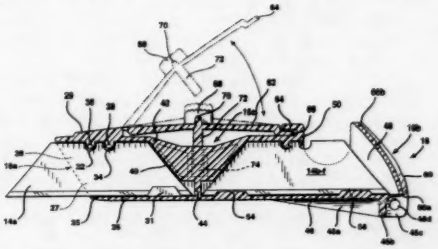
wherein an upper portion of the first ball and an upper portion of the second ball are biased against the cutter mount by the first and second spring plates, respectively, such that the cutter mount is held in a balanced manner and maintains tight contact between the cutter and the comb.

5,909,930

RETRACTABLE BLADE UTILITY KNIFE HAVING QUICK CHANGE FEATURE

Howard Nicholas Ragland, III, and James Felix Mariol, both of Cincinatti, Ohio, assignors to Millers Falls Tool Company, Cincinnati, Ohio

Filed Aug. 5, 1997, Appl. No. 906,793
Int. Cl.[6] B26B *1/08;5/00*
U.S. Cl. 30—125 **25 Claims**



1. A utility knife comprising:

a knife handle including a blade opening at a first end of said handle, a second opening at an opposite end of said handle, a slot on a surface of said knife handle, and an inner portion;

a replaceable blade for said knife; and

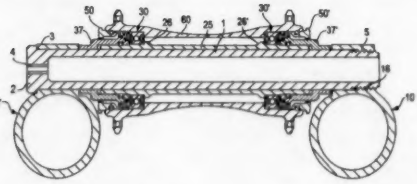
a blade carrier adapted for mounting said replaceable blade thereon, said blade carrier including a spring element having a button, said spring element adapted to engage said slot on said knife handle when said blade carrier is inserted into said inner portion of said knife handle through said second opening, said blade carrier being removable from said knife handle through said second opening therein by depressing said button through said slot to said inner portion of said knife handle to permit said blade to be replaced.

5,909,931

BICYCLE HUB

Koshi Tabe, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Continuation-in-part of application No. 08/759,941, Dec. 3, 1996. This application Jun. 23, 1997, Appl. No. 881,173.
Claims priority, application Japan, Feb. 20, 1996, 8-56976
Int. Cl.[6] B60B *27/02*
U.S. Cl. 301—110.5 **46 Claims**



1. A bicycle hub comprising:

a hub axle (**1**,**104**);

a separate spacer (**25**,**70**,**108**) disposed over an outer periphery of the hub axle (**1**,**104**);

wherein the hub axle (**1**,**104**) is detachably retained to the spacer (**25**,**70**,**108**):

a hub shell (**60**,**112**); and

a bearing (**30**,**132**,**136**) disposed between the spacer (**25**,**70**,**108**) and the hub shell (**60**,**112**) for rotatably supporting the hub shell (**60**,**112**) on the hub axle (**1**,**104**), the bearing (**30**,**132**,**136**) including:

an inner ring (**31**,**200**,**250**);

an outer ring (**33**,**204**,**254**); and

a plurality of rolling members (**32**,**208**,**256**) disposed between the inner ring (**31**, **200**,**250**) and the outer ring (**33**,**204**,**254**).

5,909,932

SECURE OPEN SHOWCASE FOR PRODUCTS SUITABLE FOR DISPLAY IN A HANGING MANNER

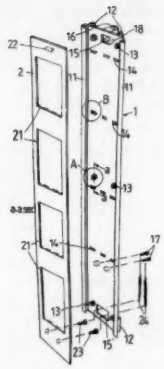
Yuan-Chang Shih, 5F.-1, No. 56, Sec. 4, Chung Yang Road, San Chung City, Taipei Shien, Taiwan

Filed Nov. 20, 1995, Appl. No. 560,879
Int. Cl.[6] A47F *3/10*
U.S. Cl. 312—135 **5 Claims**

1. A secure open showcase for products suitable for display in a hanging manner, comprising

a plurality of fixed back panels sequentially connected forming a display cylinder, each of said fixed back panels having; two forwardly and inwardly bent longitudinal edges forming two side rails, internally threaded receivers provided at a back surface, a top back portion with a lock, a front surface with multiple rows of sliding aids and multiple rows of hangers, said front surface having top and bottom portions, said top and bottom portions having upper and lower openings, respectively, and said back surface having upper studs at a lower portion thereof;

a plurality of windowed panels, each of said windowed panels being associated with one of said fixed back panels by inserting said windowed panel into said two rails of said fixed back panel, each of said windowed panels being formed with a



plurality of through windows sequentially arranged from top to bottom so that each of said through windows is adjacent to one row of said of hangers said fixed back panel, each of said windowed panels being provided near a back top with a backward and horizontally extended latch plate, and near a back bottom with lower studs, such that said latch plate and said lower studs extend through said upper opening and said lower opening of said fixed back panel, respectively, and that a tension spring can be hooked to and between each pair of said upper and said lower studs;

an upper end cover closing a top end of said display cylinder formed from said fixed back panels, said upper end cover being formed on each side with a notch corresponding to said lock provided at said top back portion of each said fixed back panel; and

a lower end cover closing a bottom end of said display cylinder formed from said fixed back panels;

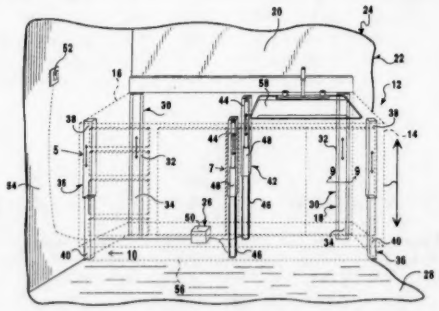
whereby products hung on said hangers in said open showcase for display and sale are freely accessible by customers via said through windows on said windowed panels without the risk of being stolen.

5,909,933

ERGONOMIC ADJUSTABLE WORK SURFACE SYSTEM

Jeffrey C Keene, 136 East Ave., Freeport, N.Y. 11520, and Alexander G. Markin, Jr., 1659 Rugby Rd., Merrick, N.Y. 11566

Filed Feb. 2, 1998, Appl. No. 17,270
Int. Cl.[6] A47B *51/00*
U.S. Cl. 312—140.1 **2 Claims**



1. An ergonomic adjustable work surface system comprising:

a) a cabinet having a counter top thereon;

b) means for setting said cabinet in a height movable manner against a wall in a room of a building comprising a pair of rear guide tracks vertically spaced apart and mounted between

said wall and a back of said cabinet, each said rear guide track including a first bracket attached to said wall and a second bracket attached to the back of said cabinet, said second bracket sliding vertically within said first bracket;

c) a pair of front telescopic guide legs, each said guide leg mounted in a vertical position within said cabinet at a front corner thereof between the floor and said counter top, each said guide leg comprising an upper segment attached to said front corner within said cabinet directly below said counter top and a lower segment which fits into and slides within said upper segment, said lower segment having a bottom end which rests upon the floor;

d) means for adjusting the height of said cabinet at any level over the range of motion of said cabinet with respect to a floor in the room of the building comprising a pair of hydraulic telescopic center legs, one located toward the back of said cabinet between said guide tracks and the other one located toward the front of said cabinet between said front telescopic guide legs, each said center leg mounted in a vertical position within said cabinet between the floor and said counter top and having a top portion attached at a top end to said counter top, a bottom portion which fits into and slides within said top portion, said bottom portion having a bottom end which rests upon said floor, and hydraulic piston means extending within and between said top portion and said bottom portion for raising and lowering said cabinet;

e) an electrically operated hydraulic pump located within said cabinet fluidly connected to each of said hydraulic pistons;

f) rocker switch means electrically connected to said hydraulic pump adjacent said cabinet above said counter top mountable in a side wall of said room, said switch means having three positions, being UP, STOP, and DOWN, said rocker switch means returning to the STOP position when a person removes a finger from said switch means; and

g) a free floating top kick skirt about a lower perimeter of said cabinet to allow said cabinet to appear as a permanent fixture regardless of what height the cabinet is set at any given time, the whole of said cabinet being vertically adjustable except for said legs and skirt remaining in contact with said floor.

5,909,934

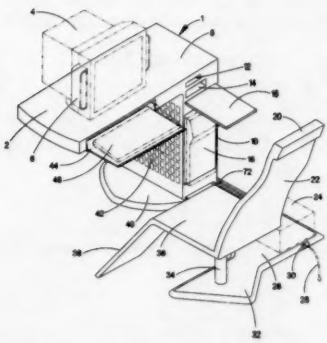
COMPUTER DESK

Jon McGraw, 2804 W. Pawnee, Apt. 244, Wichita, Kans. 67213

Filed Jul. 24, 1998, Appl. No. 122,156

Int. Cl.[6] A47B *81/06*

U.S. Cl. 312—223.3 **16 Claims**



1. A computer desk comprising:

(A) an oblongated base, the oblongated base having an upper surface, a lower surface, a forward end, a rearward end, and having a longitudinal axis extending from the forward end to the rearward end;

(B) a chair having a lower surface and a seat, the seat having a forward edge;

(C) chair attaching means interconnecting the chair and the oblongated base so that the chair overlies the rearward end of the oblongated base;

(D) a support column having an upper end, a lower end, a forward end, a rearward end, and having a first hollow interior space, the first hollow interior space being fitted for receiving and retaining a personal computer central processing unit having a tower configuration;

(E) column mounting means slidably attaching the support column to the oblongated base so that the support column extends upwardly from the upper surface of the oblongated base, and so that the support column may be slidably positioned along the longitudinal axis of the oblongated base; and,

(F) a cantilevered desk top fixedly attached to or homogeneously fused with the upper end of the support column, the cantilevered desktop having a forward end.

5,909,935

DEVICE FOR GUIDING, DRIVING, AND LOCKING A SLOT-IN MODULE OF ELECTRICAL OR ELECTRONIC EQUIPMENT IN A CABINET

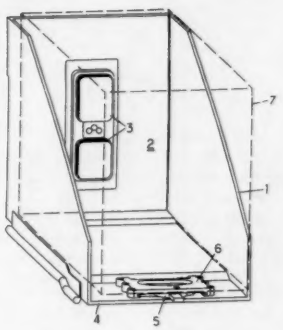
Jean Guy Esperandieu, Vernegues, and Robert Paul José Sotiriou, Vitrolles, both of France, assignors to Eurocopter France, France

Filed Dec. 18, 1996, Appl. No. 769,076

Claims priority, application France, Dec. 19, 1995, 95 15067

Int. Cl.[6] H01R *13/62*

U.S. Cl. 312—333 **13 Claims**



1. In combination, a cabinet, a slot-in module for electrical or electronic equipment in said cabinet, and a device for guiding, driving, and locking the slot-in module of electrical or electronic equipment in THE cabinet, wherein circuits of the slot-in module are connected to circuits of the cabinet by coupling connectors of the slot-in module to connectors of equipment in the cabinet, said device comprising guide elements comprising a slideway and a slide fixed respectively to the cabinet and to the slot-in module for guiding one of said guide elements selected from the group consisting of the slideway and the slide over the another of said guide elements selected from the group consisting of the slideway and the slide, wherein said slide and said slideway comprise interacting components operably connected to a rotational movement control member for actuation, said control member comprising a torque-limiting lever and said components being actuated from outside the cabinet by said rotational movement control member in such a way as to cause a movement of relative sliding of said guide elements and the slot-in module in the cabinet when said slide is engaged in said slideway and to halt said movement when an end-of-insertion and a coupling connectors-coupled position is reached, after release of said torque-limiting lever; and locking means for relative locking of said interacting components acting automatically to block said interacting components of said slide with respect to said

interacting components of said slideway and cause the slot-in module to be locked in the cabinet in a connected position, wherein said interacting components comprise a set of pinions comprising an input pinion and at least one rack, said rotational movement control member being coupled to said input pinion, said input pinion driving other pinions of said set of pinions and causing a movement of relative sliding between said guide elements, said set of pinions being secured to one of said guide elements selected from the group consisting of said slide and said slideway driving said at least one rack secured to another of said guide elements selected from the group consisting of said slide and said slideway.

5,909,936

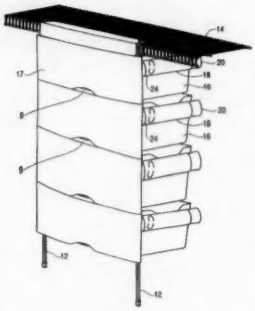
CLOSET DRAWER SYSTEM

Mark Daniels; Pam Smith, both of Ocala, Fla.; Steve McPhilliamy; John VanAkkeren, both of Chicago, Ill.; Damon Johnston, Oswego, Ill., and Mike Jaron, Mt. Prospect, Ill., assignors to Clairson, Inc., Newark, Del.

Filed Aug. 7, 1997, Appl. No. 908,203

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—334.1 **17 Claims**



1. A drawer system comprising:

a back support member having an opening utilized to secure said back support member to a surface, said back support member having a first cavity and a second cavity;

a first side support member and a second side support member, each of said side support members having a projection disposed on a first end, said projections operable with said first and second cavities so as to secure said first and second side support members to said back member, each of said side support members having a second end formed so as to be operable as a latch receiving section; and

a first resilient latch member and a second resilient latch member, each being operable with one of said latch receiving sections so as to secure one of said second ends of said side support members to a support structure,

said first resilient latch member and said second resilient latch member each being operative for clamping one of said second ends of said side support members to said support structure.

5,909,937

REFRIGERATOR DOOR ASSEMBLY

Thomas Edward Jenkins, and Duane Jubenville, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

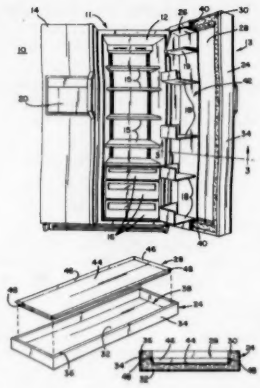
Continuation of application No. 08/410,903, Mar. 27, 1995. This application Jan. 15, 1997, Appl. No. 783,779.

Int. Cl.[6] A47B *96/04*

U.S. Cl. 312—405.1 **9 Claims**

1. A refrigerator door assembly, comprising:

an outer member having a front panel with a peripheral flange projecting generally perpendicular thereto and forming a cavity;



an inner member mounted to said outer member;

a reinforcing member of high modular elasticity material having a front panel, smaller than said outer member front panel, with a peripheral flange, narrower than said outer member peripheral flange, projecting perpendicular thereto, said reinforcing member located substantially entirely within said cavity and between said outer member and said inner member, said front panel spaced from said outer member front panel; and

a body of insulation foamed-in-place in said cavity, said insulation securing said reinforcing member in a predetermined position within said cavity in spaced apart relationship with said outer member, said insulation body substantially entirely filling the space between said outer member front panel and said reinforcing member front panel so that said insulation body bonds said reinforcing member to said outer member and said reinforcing member provides support for said outer member.

5,909,938

COLLISION PROTECTIVE ARRANGEMENT FOR THE MEASURING ARM OF A COORDINATE MEASURING APPARATUS

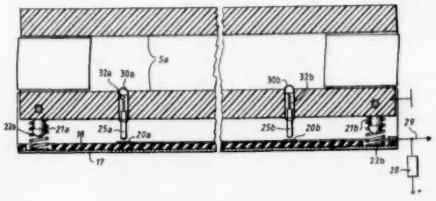
Kurt Brenner, Satteldorf; Karl Seitz; Peter Ahnelt, both of Oberkochen; Roland Roth, Waldstetten, and Walter Dominicus, Königsbronn, all of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Germany

Filed Sep. 13, 1996, Appl. No. 713,463

Claims priority, application Germany, Sep. 16, 1995, 295 14 892

Int. Cl.[6] G01B *5/004*

U.S. Cl. 33—503 **11 Claims**



1. A combination of a collision protective arrangement and a measuring arm of a coordinate measuring apparatus for measuring a workpiece, the combination comprising:

said measuring arm having at least one surface;

a part for covering and protecting said surface;

a circuit switchable between a first electrical state wherein no contact is present between said part and another object and a

second electrical state indicative of a collision between said part and another object;

said surface and said part conjointly defining an interface;

said circuit including a plurality of electrically connected resiliently-biased contact pins mounted at said interface to switch said circuit into said second electrical state when said collision takes place;

said part being a cover covering said surface of said measuring arm;

said measuring arm being made of an electrically conductive material;

said contact pins being fixedly mounted in said measuring arm so as to be electrically interconnected by said electrically conductive material;

said circuit including a plurality of contacts mounted on said cover to coact with said contact pins;

a suspension assembly for resiliently suspending said cover from said measuring arm at a predetermined distance from said surface to permit said contacts to contact corresponding ones of said contact pins when said cover is pushed in said direction toward said surface during said collision; and,

said contact pins projecting beyond said surface and being resiliently biased toward said cover whereby said contact pins yield when coming into contact engagement with said contacts, respectively, during said collision.

5,909,939

HIGH ACCURACY COORDINATE MEASURING MACHINE HAVING A PLURALITY OF LENGTH-ADJUSTABLE LEGS

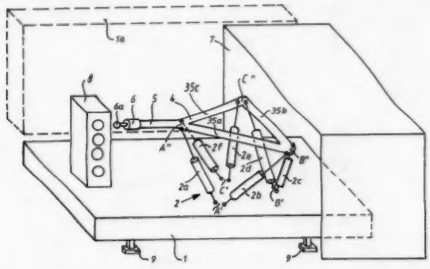
Winfried Fugmann, Wetzlar, Germany, assignor to Leitz-Brown & Sharpe Messtechnik GmbH, Wetzlar, Germany

Filed Sep. 16, 1996, Appl. No. 714,372

Claims priority, application Germany, Sep. 18, 1995, 195 34 535

Int. Cl.[6] G01B *5/00*

U.S. Cl. 33—503 **42 Claims**



1. A coordinate measuring machine, comprising:

a baseplate having a workpiece receptacle;

a tracing head carried on an essentially rigid body; and

a positioning mechanism for positioning the tracing head in relation to the workpiece receptacle, the positioning mechanism including legs which are mounted pivotably on at least three fixed points on the baseplate and pivotably on the essentially rigid body, at least three of the legs being adjustable in length.

5,909,940

VEHICLE BODY ALIGNMENT APPARATUS

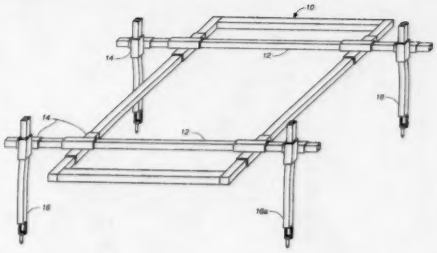
James Baldock, P.O. Box 23424, Oakland, Calif. 94623

Filed Jul. 9, 1996, Appl. No. 677,384

Int. Cl.[6] G01B *5/25*

U.S. Cl. 33—608 **19 Claims**

1. An apparatus for repairing the body of a vehicle, the vehicle having a damaged area and a plurality of set points, including at least first, second and third set points on undamaged areas of the vehicle, said apparatus comprising:



a rigid framework,

an extension assembly depending from said rigid framework having a plurality of extension members including at least three downwardly depending set point extension members for making contact with the first, second and third set points on the vehicle and for supporting said rigid framework in a fixed position above the vehicle body,

at least one repair reference point member for extension from said rigid framework to a predetermined repair reference point adjacent the damaged area, said predetermined repair reference point symmetrically opposed to one of the first, second and third set points,

each of said extension members including securing means for demountably securing said respective extension member to one of the set points on the vehicle,

said extension assemble including interconnecting means for adjustably interconnecting said extension members and said rigid framework,

said set point extension members of said extension assembly adjustably extendable from said rigid framework to the set points on the vehicle,

means for adjustably attaching said repair reference point member and said rigid framework,

said repair reference point member of said extension assembly adjustably extendable from said rigid framework to said predetermined repair reference point to which the damaged areas of the vehicle can be repaired by comparing said predetermined repair reference point with the set points on the vehicle, and

means for supporting said rigid framework in a fixed position above the vehicle body, said means for supporting consisting of said extension members, said interconnecting means, and said securing means.

5,909,941

PASSIVE MULTIPLE REMOTE CENTER COMPLIANCE DEVICE

Chi-Cheng Cheng, Kaohsiung, and Gin-Shan Chen, Ping-Tung Hsien, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Sep. 16, 1997, Appl. No. 931,542

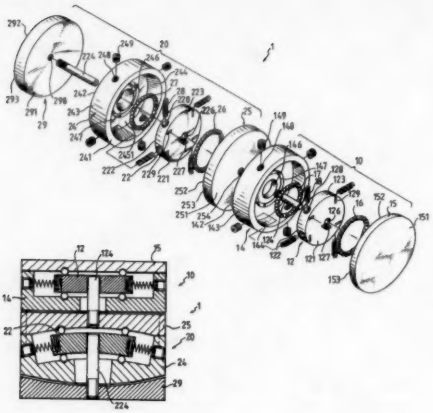
Int. Cl.[6] G01B *5/25*

U.S. Cl. 33—644 **20 Claims**

1. A passive multiple remote center compliance device comprising a translational structure and a gyrational structure, wherein

said translational structure comprising a translational housing; a translational block having a central axis, said translational block being resiliently suspended within said translational housing by means of a plurality of resilient means to enable translational motion within said translational housing and rotational motion about said central axis of said translational block;

said gyrational structure comprising a gyrational housing; a connecting block; and a gyrational block, said gyrational block having a spherical upper surface, a spherical lower surface and a central axis, said gyrational block being resil-



iently suspended within said gyrational housing by means of a plurality of resilient means to enable rotational motion about said central axis of said gyrational block and angular motion conforming curvature of said spherical upper and lower surfaces of said gyrational block; wherein

said central axis of said translational block is substantially coaxial with said central axis of said gyrational block and serially connected to said gyrational housing through said translational housing; and said central axis of said gyrational block is serially connected to said connecting block through said gyrational housing.

5,909,942

DRYER SECTION

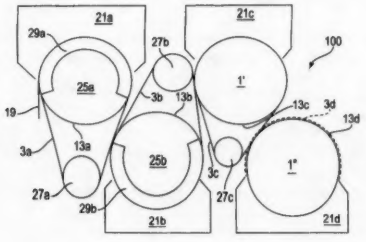
Karl Steiner, Herbrechtingen; Karlheinz Straub, Heidenheim; Robert Wolf, Herbrechtingen; Albrecht Meinecke; Tri Chau-Huu, both of Heidenheim, and Markus Oechsle, Bartholomae, all of Germany, assignors to Voith Sulzer Papiermaschinen *GmbH, Heidenheim, Germany*

Filed Oct. 7, 1997, Appl. No. 946,645

Claims priority, application Germany, Oct. 15, 1996, 196 42 526

Int. Cl.[6] D21F *5/00*

U.S. Cl. 34—117 **31 Claims**



21. A dryer section in a machine for manufacturing a material sheet comprising:

at least one of a dryer cylinder and a sheet guide roll;

a plurality of threads in contact with at least a portion of at least one of the dryer cylinder and the sheet guide roll;

the plurality of threads surrounding a circumferential surface of the at least one of the dryer cylinder and the sheet guide roll; and

the plurality of threads adapted to contact the material sheet and to provide a separation between the circumferential surface and the material sheet.

5,909,943

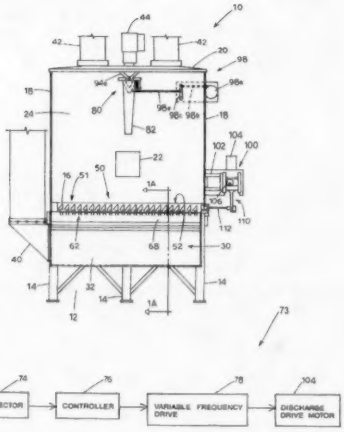
APPARATUS FOR COOLING OR DRYING BULK MATERIAL

Daniel J. Poirier, Raleigh; Brian D. Hinkle, Apex, both of N.C., and Joseph M. DeWane, Windham, N.H., assignors to Aeroglide Corporation, Raleigh, N.C.

Filed Nov. 7, 1997, Appl. No. 966,283

Int. Cl.[6] C26B *17/12*

U.S. Cl. 34—172 **3 Claims**



1. A cooling-drying apparatus for cooling or drying granular material comprising:

a) a mainframe;

b) a material chamber supported on the mainframe for holding granular material while the granular material is cooled or dried by a system of air being passed therethrough;

c) a discharge assembly mounted on the apparatus for discharging granular material from the chamber;

d) a duct system associated with the apparatus for directing air upwardly through the chamber and out the top portion of the apparatus;

e) a material spreader assembly mounted on the apparatus for receiving granular material and generally uniformly spreading the granular material into the chamber of the apparatus, the spreader assembly including:

i) a cradle pivotally mounted to the apparatus about a first axis;

ii) a spout having an inlet and outlet portion pivotally mounted to the cradle about a second axis that extends in a direction generally normal to the first axis of the cradle;

iii) a spout actuator mounted on the cradle and connected to the spout for swinging the spout back and forth about the second axis;

iv) a cradle actuator operatively connected to the cradle for swinging the cradle back and forth about the first axis; and

v) wherein the simultaneous swinging of both the cradle and the spout results in the spout moving in a two-dimensional oscillating pattern about the chamber and uniformly spreading the granular material into the chamber.

5,909,944

PROJECTION-TYPE DISPLAY APPARATUS

Akitaka Yajima; Motoyuki Fujimori; Mutsuya Furuhata; Tomiyoshi Ushiyama; Terunaga Koide; Toshiaki Hashizume; Kiyoshi Miyashita; Hiroshi Harima, and Keijiro Naito, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

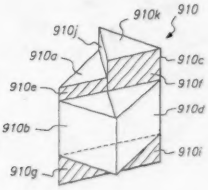
Division of application No. 08/697,707, Aug. 27, 1996, Pat. No. 5,743,610, which is a continuation of application No. PCT/JP95/0219951226, Dec. 26, 1995. This application Mar. 3, 1998, Appl. No. 34,599.

Claims priority, application Japan, Dec. 27, 1994, 6-326492; Dec. 27, 1994, 6-326493; Dec. 27, 1994, 6-326494; Dec. 27, 1994, 6-326497; Dec. 27, 1994, 6-326498

This patent is subject to a terminal disclaimer

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—81 **4 Claims**



1. A method of assembling a dichroic prism comprised of four triangular prisms affixed to each other and X-shaped reflecting surfaces disposed along affixed surfaces of said four triangular prisms, comprising:

a step of affixing a first triangular prism and a third triangular prism to each other such that a first exposed surface is formed on a part of an affixed side of said first triangular prism;

a step for affixing a second triangular prism and a fourth triangular prism to each other such that a second exposed surface is formed on a part of an affixed side of said second triangular prism; and

a step for affixing said first, second, third, and fourth triangular prisms to each other such that said first exposed surface and said second exposed surface are located in the same horizontal direction and a third exposed surface being orthogonal to said first and second exposed surfaces is formed between said first and said second triangular prisms.

5,909,945

TRACTION AUGMENTATION DEVICE

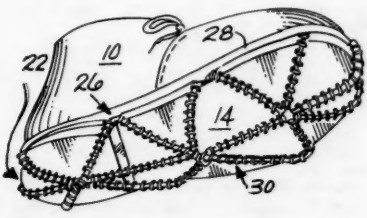
Thomas E. Noy, 7966 Miami Beach Rd., Seabeck, Wash. 98380

***PCT No. PCT/US96/13107, § 371 Date Feb. 12, 1998, § 102(e)* Date Feb. 12, 1998, PCT Pub. No. WO97/06707, PCT Pub. Date Feb. 27, 1997**

Provisional application No. 60/002,310, Aug. 14, 1995. This PCT application Aug. 12, 1996, Appl. No. 11,643.

Int. Cl.[6] A43B *3/10;15/00;* **B60C** *11/00;27/00*

U.S. Cl. 36—7.6 **22 Claims**



1. A traction augmentation device for mounting about a movable boss to augment the traction in the footprint of engagement between the boss and an interactive surface thereopposite when the interactive surface drives or is driven by the boss in the movement thereof, the boss being operatively circumposed relatively radially outwardly about an axis of a carrier on which the boss is operatively supported, and connected to one end of the carrier so as to have relatively axially inwardly and axially outwardly oriented sides thereon, relative to the carrier, and the boss having a central portion thereof which is intrapositioned across the end of the carrier so as to have a face on the axially outwardly oriented side thereof, an outer peripheral flange portion thereof which is circumposed about the central portion thereof and has a generally annular surface on the axially inwardly oriented side thereof, and an outer periphery circumposed about the flange portion thereof that is interposed between the axially inwardly oriented annular surface of the flange portion and the face of the boss,

the traction augmentation device comprising:

a cowling of resiliently flexible material which is so limp in the normally relaxed state thereof as to be essentially formless, but which when activated for mounting on the boss, can be formed into an elasticized sock for tight fitting engagement about the boss at the outer periphery thereof,

the sock having an axis for general alignment with the axis of the carrier, operatively forward and rearward ends that are spaced apart from one another along the axis of the sock, an annular rim portion of resiliently flexible material that is circumposed about the axis of the sock at the operatively forward end thereof for engagement with the outer periphery of the boss, a continuously uninterrupted loop of resiliently flexible material that is circumposed about the axis of the sock at the operatively forward end thereof for engagement with the axially inwardly oriented annular surface of the flange portion, and a posterior portion of resiliently flexible material that is circumposed about the axis of the sock at the operatively rearward end thereof for engagement with the face of the boss,

the loop defining an end opening through which the sock can be sleeved about the boss at the outer periphery thereof, but when in the normally relaxed state thereof, the loop and posterior portion of the sock having a diameter at the rim portion thereof, that is so much smaller than the outer periphery of the boss, that the sock can only be sleeved about the outer periphery of the boss by temporarily stretching the loop, rim and posterior portions of the sock in directions transverse the axis thereof, as the sock is passed axially inwardly about the boss and then released to tightly engage about the boss at the outer periphery thereof when the hoop tension in the loop, rim and posterior portions of the sock causes the sock to resume a partially relaxed condition on the boss,

one of the rim and posterior portions of the sock having relatively inner and outer peripheral sides thereon for *opposing the boss and the interactive surface, respectively,* in the footprint of engagement therebetween, and comprising a plurality of elongated strands of resiliently flexible material which have oppositely disposed end portions and are interconnected with one another at junctures between adjacent end portions of adjacent strands to form a network of the material which is intrapositioned between the sides of the one portion to lend elasticity to the one portion over an area thereof corresponding to the footprint of engagement between the boss and the interactive surface,

the network having an exoskeleton of elongated generally tubular traction generating members sleeved about strands of the resiliently flexible material therein,

the respective traction generating members being generally coextensive with the respective strands corresponding thereto in the area of the one portion corresponding to the footprint of engagement, and having oppositely disposed end portions and hi durable traction elements on the respective inner and outer peripheral sides of the one portion of the sock to carapace the network against the abrasive action of the footprint both from the boss and from the interactive surface thercopposite, and

each of the respective traction generating members being resiliently flexible and having one end portion thereof connected to the network at an adjacent juncture therein, but

the other end portion of each traction generating member being detachedly spaced apart from the junctures of the network, and

the traction generating members being so loosely engaged about the respective strands of resiliently flexible material corresponding thereto that the network can flex resiliently within the exoskeleton during the step of sleeving the sock about the boss, and during any subsequent movement of the sock in relation to the boss and the interactive surface at the footprint of engagement therebetween.

5,909,946

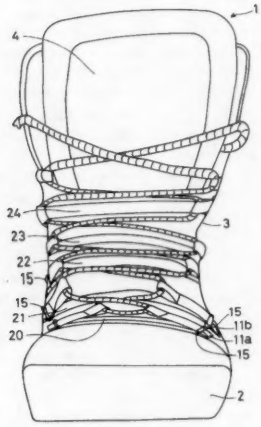
SNOWBOARD BOOT POWER LACING CONFIGURATION

Shinpei Okajima, Izumi, Japan, assignor to Shimano Inc., Sakai, Japan

Filed Feb. 23, 1998, Appl. No. 27,904

Int. Cl.[6] **A43C** *11/00;* **A43B** *5/04*

U.S. Cl. 36—50.1 **10 Claims**



1. An article of footwear comprising:

a sole portion (**2**) made of a sole forming material;

an upper portion (**3**) adhered to said sole portion (**2**), said upper portion (**3**) formed with a generally central extending tongue portion (**4**) on an upper surface thereof;

a first short strap (**10***a*) and a second short strap (**11***a*) fixed to lower edges of said upper portion (**3**), said first short strap (**10***a*) fixed to a left side of said upper portion (**3**) and said second short strap (**11***a*) fixed to a right side of said upper portion (**3**), said first and second short straps being positioned at generally corresponding right and left sides of said upper portion (**3**), each of said first and second short straps defining a loop having a ring (**15**) extending through said loop;

a long strap (**20**) extending through said ring (**15**) of said first short strap (**10***a*) and further extending through said ring (**15**) of said second short strap (**11***a*), said first long strap (**20**) having loops formed at each end thereof;

a lace (L), said lace extending in a criss-cross manner through said loops formed in said long strap, respectively, for tightening the article of footwear on a foot, said long strap providing leverage to said lace for tightening the article of footwear on the foot.

5,909,947

SPORT FOOTWEAR ASSEMBLY

Jean-Louis DeMarchi, Saint-Jorioz, France, assignor to Salomon S.A., Metz-Tessy, France

Filed Jan. 15, 1997, Appl. No. 784,107

Claims priority, application France, Jan. 22, 1996, 96 00833

Int. Cl.[6] **A43B** *5/04;3/10;23/07*

U.S. Cl. 36—50.5 **27 Claims**

1. A sport footwear assembly comprising:

a sport article; and

a footwear article attached to said sport article, said footwear article comprising:

an internal element having a size and shape adapted to receive the entirety of the foot therein and be in direct contact with the foot, said internal element having an opening, defined at least in part by a pair of laterally opposed edge portions at a front portion of the foot, for receiving the foot;

an external element having a size and shape adapted to receive said internal element therein, said external element having an opening, defined at least in part by a pair of opposed edge portions at a front portion of the foot, for receiving the foot;

said external element being affixed to said sport article and said internal element being removably positioned within said external element;

a lacing zone defined by a series of lacing elements on each of said edge portions of said internal element and a series of lacing elements on each of said edge portions of said external element, said lacing zone thereby being provided exclusively at said front portion of the foot; and

a single lace forming two strands connected to one another, said lace extending along and connecting said lacing elements in a predetermined alternating path, such that during a traction on said two strands of said lace, said lace tightens said edge portions of said openings to bring said edge portions closer together to maintain said edge portions in a tightening position on the foot, wherein said traction is carried out simultaneously on said two strands of said single lace;

said single lace providing a unique connection of said internal element within said external element at the front part of the foot.

5,909,948

SHOE SOLE STRUCTURES

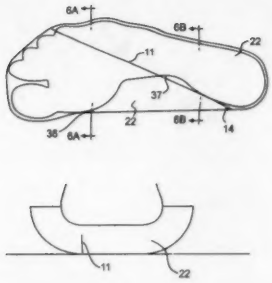
Frampton E. Ellis, III, 2895 S. Abingdon St., Suite B-2, Arlington, Va. 22206

Continuation of application No. 07/608,748, Nov. 5, 1990, abandoned. This application Apr. 4, 1994, Appl. No. 222,004.

Int. Cl.[6] **A43B** *13/14*

U.S. Cl. 36—102 **14 Claims**

1. A shoe sole, comprising:



a shoe sole having a load-bearing portion, including a side portion, proximate to at least one of the following bones of a wearer's foot: a head of a fifth metatarsal; a base of a fifth metatarsal; a lateral tuberosity of a calcaneus; a base of a calcaneus; a head of a first metatarsal; and a head of a first distal phalange;

said load-bearing portion of the shoe sole has a width that provides structural support for said at least one wearer's foot bone throughout at least a full range of said wearer's pronation and supination foot motion on the ground, including extreme pronation and extreme supination;

said load-bearing side portion is bent up toward a sole of the wearer's foot proximate to said at least one wearer's foot bone;

said load-bearing side portion has a lower surface, which becomes ground-contacting during sideways motion of said shoe sole on the ground; and

wherein said shoe sole has a hinge including at least one lateral stability sipe and said at least one lateral stability sipe is oriented substantially in a longitudinal direction, originates on a sole side of an area of the shoe sole corresponding to a wearer's heel, and terminates at a forefoot area of the shoe sole on a sole side opposite the originating sole side.

5,909,949

HEAD LAMP DEVICE FOR VEHICLE

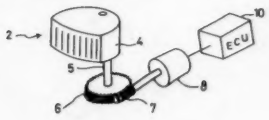
Shinichiro Gotoh, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

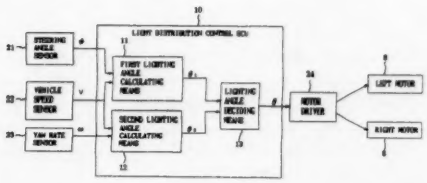
Filed Jun. 3, 1997, Appl. No. 868,184

Claims priority, application Japan, Jun. 3, 1996, 8-140488

Int. Cl.[6] **B60Q** *1/08*

U.S. Cl. 362—37 **19 Claims**





1. A head lamp device for a vehicle capable of changing a lighting region in front of the vehicle in right and left directions, comprising:

a head lamp;

lighting region changing means for changing a lighting region of the head lamp;

steering angle detecting means for detecting a steering angle;

turning movement detecting means for detecting a turning movement of a body of the vehicle in right and left directions;

first lighting angle calculating means for calculating a first lighting angle based on said steering angle detected by said steering angle detecting means;

second lighting angle calculating means for calculating a second lighting angle based on said turning movement detected by said turning movement detecting means;

lighting angle deciding means for deciding a final lighting angle from said first lighting angle and said second lighting angle; and

control means for controlling said lighting region changing means to change said lighting region based on said final lighting angle.

5,909,950

METHOD AND APPARATUS FOR TURNING ON AND OFF A LAMP IN A REFRIGERATOR

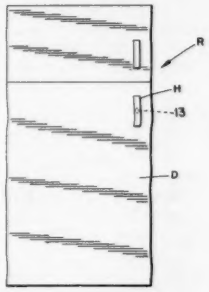
Jin-oh Seok, Suwon, and Bong-cheon Jung, Pusan, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 19, 1997, Appl. No. 914,149

Claims priority, application Rep. of Korea, Aug. 20, 1996, 96-34492

Int. Cl.[6] **F25D** *27/00*

U.S. Cl. 362—94 **5 Claims**



3. A refrigerator comprising:

a body defining a refrigerating compartment;

a door mounted on the body for opening and closing the compartment;

a fluorescent lamp disposed in the compartment;

a sensor unit mounted on an exterior of the door and actuable in response to being touched by a user;

a switch arranged to be actuated by the door for indicating when the door is open; and

a microcomputer connected to the lamp, the sensor unit, and the switch for illuminating the lamp in response to the sensor being touched by a user and thereafter maintaining the lamp illuminated while the door is open.

5,909,951

OPTICAL CARTRIDGE

Audun Johnsen, Karlstadvn. 26, 2040 Kløfta; Ola Ro, Våglivn. 30, 1914 Ytre Enebakk, both of Norway, and Jon Arne Schiefloe, Pestalozzi Strasse 54, D-1000 Berlin, Germany

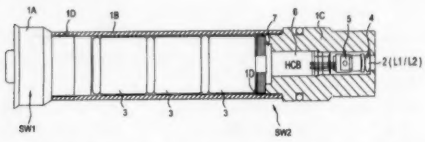
PCT No. PCT/NO95/00009, § 371 Date Sep. 20, 1996, § 102(e) Date Sep. 20, 1996, PCT Pub. No. WO95/18949, PCT Pub. Date Jul. 13, 1995

PCT Filed Jan. 10, 1995, Appl. No. 676,114

Claims priority, application Norway, Jan. 11, 1994, 940105

Int. Cl.[6] F41G *1/34*

U.S. Cl. 362—111 **11 Claims**



1. An optical cartridge for use in a weapon having a barrel and a firing chamber to emit light signals instead of a projectile through the barrel of the weapon when a trigger on the weapon is actuated, said optical cartridge comprising:

a casing configured to fit within the firing chamber of the weapon;

a light source and a focusing lens system disposed within said casing so as to emit a beam of non-visible light through the barrel of the weapon;

a power source which energizes said light source to emit said beam of light;

a control circuit which controls the energizing of said light source;

a first, loading switch connected to said power source, said loading switch being actuated at a time when the optical cartridge is loaded into the firing chamber of the weapon; and

a second, firing switch connected to said control circuit, said firing switch being actuated at a time when said trigger is actuated;

said loading switch and said firing switch controlling operation of the optical cartridge such that 1) a first, alignment light beam is emitted by said light source from the time the optical cartridge is loaded into the firing chamber until the time the trigger is actuated; and 2) a second, firing light beam that is distinguishable from said alignment light beam is emitted by said light source from the time the trigger is actuated, or from a time shortly thereafter, for a predetermined length of time.

5,909,952

FLASHING INDENTIFICATION LIGHT ADAPTOR SYSTEM FOR FLASHLIGHT

Phillip K. Guthrie, and Charles A. Stundzia, both of Hilton Head Island, S.C., assignors to TBI Concepts, L.L.C., Johns Island, S.C.

Continuation-in-part of application No. 08/694,166, Aug. 8, 1996, Pat. No. 5,671,999. This application Apr. 17, 1997, Appl. No. 842,852.

Int. Cl.[6] F21L *1/00;15/04*

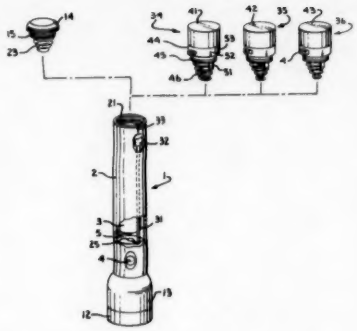
U.S. Cl. 362—205 **12 Claims**

1. A flashing light adaptor system which is connectable to a flashlight equipped with an end cap with threads mating with cooperating threads in a barrel of the flashlight, the end cap contacting a first terminal of a battery and urging an opposite terminal of the battery into electrical contact with a switch terminal in the barrel, said flashing light adaptor system comprising:

a. an adaptor housing adapted to replace said end cap, said adaptor housing being equipped with threads mating with the cooperating threads in the flashlight barrel;

b. a flashing light source positioned within said adaptor housing;

c. a battery cell holding sleeve attached at a first end to said adaptor housing, said holding sleeve including a battery terminal at a second end opposite to said first end, said sleeve being sized to accommodate at least one battery cell and having an outer diameter which is smaller than an inner diameter of the flashlight barrel such that the entire sleeve fits within the flashlight barrel, said sleeve battery terminal being positioned where it is placed in electrical contact with the flashlight switch terminal when said adaptor housing is threadably engaged with the flashlight barrel;



d. a switch selectively connecting the sleeve battery terminal to said flashing light source; and

e. a colored lens positioned in covering relation with said flashing light source.

5,909,953

FLUORESCENT LIGHTING FIXTURE

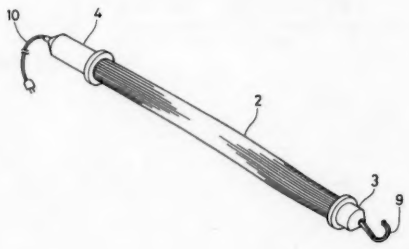
Kensuke Shima, Nara, Japan, assignor to Jefcom Co., Ltd., Osaka, Japan

Filed May 15, 1997, Appl. No. 857,106

Claims priority, application Japan, May 17, 1996, 8-123792

Int. Cl.[6] F21K *2/00*

U.S. Cl. 362—260 **5 Claims**



1. A fluorescent lighting fixture comprising:

a fluorescent lamp;

two electric wires connected to said lamp;

a protective tube surrounding said lamp, said protective tube being provided with a roulette configuration extending longitudinally on said protective tube; and

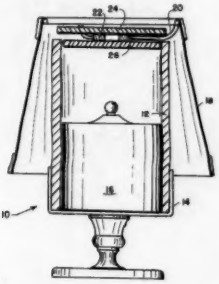
at least two longitudinal ribs provided on said protective tube, said at least two longitudinal ribs having respective long holes therein through which said two electric wires are respectively inserted.

5,909,954

REFLECTIVE SHADE FOR ELECTRIC TABLE LAMP

Stephen E. Thomas, 38840 Godfrey Pl., Fremont, Calif. 94536

Filed Jun. 9, 1997, Appl. No. 871,392
Int. Cl.[6] F21V *7/00*
U.S. Cl. 362—307 **8 Claims**



1. A lamp shade for an electric lamp having an vertical, translucent, ornamental chimney surrounding the lamp bulb, said chimney having a tubular top surface with an inside and an outside diameter; said lamp shade comprising:

a frame supporting a frustum shaped lamp shade, said frame including a toroidal mounting ring having a common central axis with said lamp shade, said ring having a top and a bottom surface;

a first translucent disk secured to the top surface of said toroidal ring, said first disk having a diameter greater than the inside diameter but no greater than the outside diameter of said top surface of said tubular chimney; and

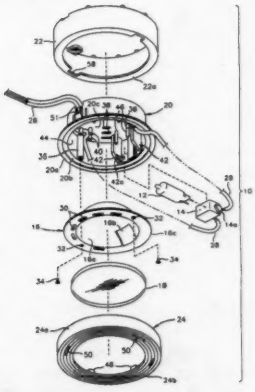
a second translucent disk secured to the bottom surface of said toroidal ring, said second disk having a diameter slightly less than the inside diameter of said top surface of said tubular chimney.

5,909,955

PUCK STYLE UNDER CABINET LIGHT FIXTURE WITH IMPROVED MOUNTING RING

John W. Roorda, La Jolla, Calif., assignor to Westek Associates, San Diego, Calif.

Filed Mar. 10, 1997, Appl. No. 814,607
Int. Cl.[6] B60Q *1/00;3/00;* **F21S** *1/06;3/06*
U.S. Cl. 362—368 **19 Claims**



1. A light fixture, comprising:

a lamp assembly;

a cylindrical housing surrounding and supporting the lamp assembly; and

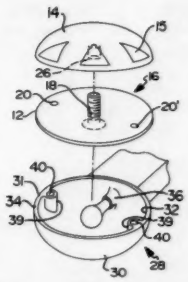
a cylindrical mounting ring surrounding and supporting the cylindrical housing, the mounting ring having a pair of radially inwardly directed mounting tabs for receiving fastener screws, said mounting ring having an upper edge with a plurality of circumferentially spaced projections for engaging a support surface to define a plurality of airflow gaps.

5,909,956

MOTORCYCLE TURN SIGNAL LENS COVER

Stephen G. Broyles, 2051 Belton, Garden City, Mich. 48135

Filed Mar. 3, 1997, Appl. No. 808,468
Int. Cl.[6] F21V *33/00;* **B62J** *6/00*
U.S. Cl. 362—473 **7 Claims**



1. A motorcycle turn signal lens cover assembly, the assembly comprising:

(a) a motorcycle turn signal lens, the lens having a threaded central first opening formed therethrough;

(b) a decorative cover which overlies the lens; and

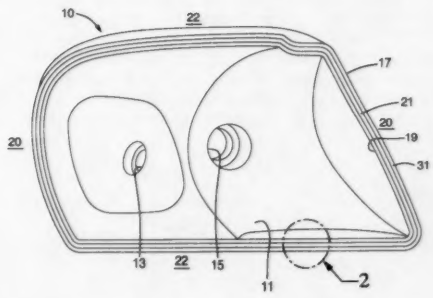
(c) a threaded fastener for interconnecting the cover to the lens through the central first opening.

5,909,957

SEALED VEHICLE LAMP AND ASSEMBLY METHOD THEREFOR

Martin Dirk Skirha; Cliff George Ambler; William Alan Nyberg; Nicky Marion Bronnenberg; Kelly Joe Snyder, all of Anderson, and Steven Roy Seybert, Pendleton, all of Ind., assignors to Guide Corporation, Anderson, Ind.

Filed Dec. 23, 1996, Appl. No. 772,637
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—546 **6 Claims**



1. A method of sealing an automotive lighting assembly between a housing assembly and a lens assembly thereof, comprising the steps:

providing a housing assembly having a closed peripheral channel;

providing a lens assembly having a closed peripheral tongue substantially complementary to said closed peripheral channel;

dispensing a closed bead of sealing adhesive into the closed peripheral channel;

inserting said tongue into said channel; and,

ultrasonic welding said channel and tongue at predetermined locations;

whereby said housing and lens assemblies are retained in a desired relationship while the sealing adhesive cures.

5,909,958

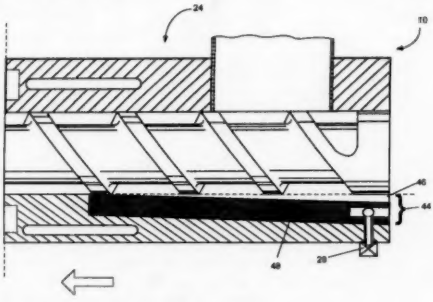
SCREW EXTRUDER WITH INDEPENDENTLY ADJUSTABLE GROOVE DEPTH

Chris J. Rauwendaal, Los Altos, Calif., assignor to Rauwendaal Extrusion Engineering, Inc., Los Altos Hills, Calif.

Filed Apr. 25, 1997, Appl. No. 846,129

Int. Cl.[6] B29B *7/60*

U.S. Cl. 366—76.2 **21 Claims**



1. A screw extruder, comprising;

a barrel assembly wherein:

said barrel assembly has a cylindrical central bore defining an inner surface; and

said barrel assembly has an input end and an output end;

said barrel assembly input end includes a feed housing portion wherein:

said feed housing portion has at least two groove channels which open into the inner surface of said feed housing portion, each groove channel having a length, and a radial depth; and

said feed housing portion has an opening for introduction of material into the central bore;

a shaping orifice situated at the output end of the barrel assembly;

an extruder screw positioned within the central bore;

a key disposed in each groove channel, each of said keys having a radial height, an upstream end and a downstream end; and

at least one independently activated actuator for each of said keys which adjusts the radial depth of each of said keys in each of said groove channels independently from said radial depth of any other said key in any other said groove channel.

5,909,959

COMPACT FLUID MIXER

Horst Gerich, 1652 Golconda Ct., Minden, Nev. 89423

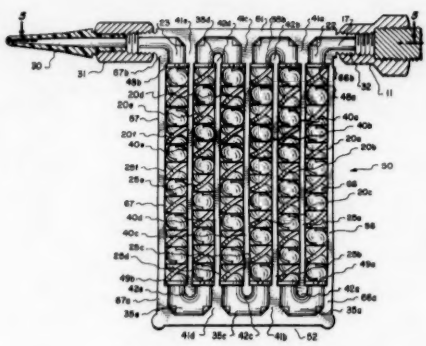
Filed Nov. 4, 1997, Appl. No. 964,306

Int. Cl.[6] B01F *5/00*

U.S. Cl. 366—339 **8 Claims**

1. In an apparatus for mixing together two or more fluids comprising:

a housing having a fluid inlet and a fluid outlet, said housing defined by a top and bottom wall which are integrated with opposing sidewalls and a front and a back wall;



said top and bottom wall including at least one stem section from which extends a respective partition, said partition extending from said respective stem section to a terminal end spaced apart from either said bottom or top wall respectively;

said stem section having a shoulder and said partition defining at least two channels aligned in parallel, where each channel is connected in series by curved passages defined by said partitions and walls; and,

said channels including static mixing means for enhancing the mixing of said fluids wherein said stem section includes a shoulder and said static mixing means comprises predetermined individual mixing units maintained within said channels by said shoulder.

5,909,960

MOUNTING ASSEMBLY FOR LIGHT DUTY SNOW PLOW

Willem Jager, RR#2, Breslaw, Ontario, Canada, N0B 1M0; Roland Peter Barth, 575 Sandbury Lane, Waterloo, Ontario, Canada, N2T 1Z5, and Craig Shoemaker, RR#1, Elora, Ontario, Canada, N0B 1S0

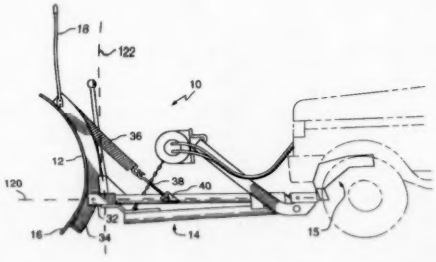
Continuation of application No. 08/641,613, May 1, 1996, Pat. No. 5,778,567. This application Feb. 2, 1998, Appl. No. 16,929.

Claims priority, application Canada, Mar. 29, 1996, 2173025

This patent is subject to a terminal disclaimer

Int. Cl.[6] E01H *5/04*

U.S. Cl. 37—235 **12 Claims**



1. A universal mounting assembly for a snow plow comprising:

a first frame having a rear end and a front end,

a second frame having a rear end, a front end and a center line extending centrally of the second frame from a center of the rear end of the second frame to a center of the front end of the second frame,

the rear end of the first frame adapted to be coupled to a front of a vehicle with the rear end disposed to extend horizontally across the front of the vehicle,

an elongate snow plow having a snow engaging front, a rear and a generally straight road engaging lower edge,

the front end of the second frame coupled to the rear of the snow plow at horizontally spaced locations,

one of the first frame and the second frame overlying the other vertically spaced sufficiently to permit pivoting of the second frame relative the first frame about the center line,

the front end of the first frame coupled to the center of the front end of the second frame by a pivot joint permitting (a) pivoting of the first frame relative the second frame about a first axis through the pivot joint normal the center line and generally normal to both the first and second frames, and (b) pivoting of the first frame relative the second frame about the center line,

the first frame carrying proximate its rear end an arcuate slideway disposed at a constant radius from the first axis and extending generally horizontally side-to-side of the first frame,

the rear end of the second frame coupled to the slideway for sliding side-to-side therein to permit the second frame to pivot to different angular positions about the first axis,

a lock mechanism to releaseably lock the rear end of the second frame against sliding in the slideway,

the rear end of the second frame coupled to the slideway to permit relative pivoting of the second frame about the center line.

5,909,961

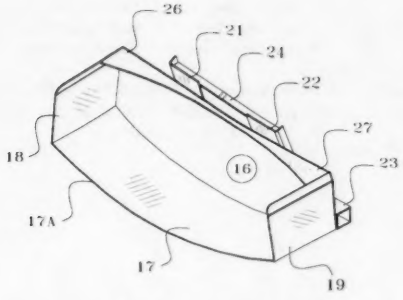
DITCH DIGGING APPARATUS

Raynie Pullman, R. R. 2, Box 20, Wolsey, S. Dak. 57384

Filed Dec. 1, 1997, Appl. No. 980,800

Int. Cl.[6] E02F *3/00*

U.S. Cl. 37—444 **13 Claims**



1. *A ditch digging apparatus comprising:*

a bucket having a back wall, a bottom wall having an upward radius curvature relative to a ground, a pair of spaced-apart side walls, an open front, and a means for mounting said bucket to a prime mover for cutting and forming a ditch in a single pass through a ground.

5,909,962

TIP ASSEMBLY FOR AN EDGE OF AN IMPLEMENT OF A WORK MACHINE

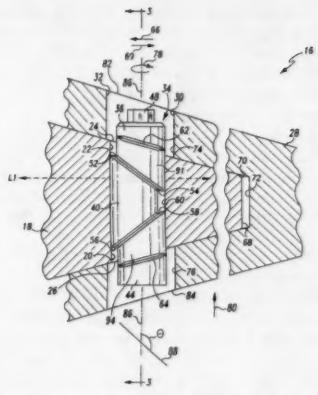
Richard E. Livesay, Peoria; Brent C. Bargfrede, Dunlap; John L. Bender, East Peoria; Greg O. Taylor, Peoria, and Phillip W. Dawson, East Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 26, 1997, Appl. No. 979,135

Int. Cl.[6] E02F *9/28*

U.S. Cl. 37—456 **19 Claims**

1. A tip assembly for an edge of an implement of a work machine, comprising:



an adapter secured to said edge of said implement, wherein (i) said adapter has an adapter aperture extending therethrough, (ii) said adapter aperture defines an aperture sidewall which extends between an upper end and a lower end of said adapter aperture;

an implement tip having a tip aperture extending therethrough, said implement tip being positioned relative to said adapter such that said adapter aperture and said tip aperture align to form a passageway;

a sleeve subassembly positioned within said passageway, wherein said sleeve subassembly includes (i) a first member having a first opening extending therethrough, (ii) an intermediate member having a second opening extending therethrough, and (iii) a second member having a threaded hole defined therein, wherein said first member, said second member, and said intermediate member are each positioned directly in contact with said aperture sidewall; and

a fastener which includes a threaded portion, wherein (i) said fastener extends through said first opening in said first member and said second opening in said intermediate member, and (ii) said threaded portion of said fastener threadingly engages said threaded hole of said second member.

5,909,963

METHOD FOR DETERMINING A TEMPERATURE OF A BODY BY MEASURING EMITTED THERMAL NOISE

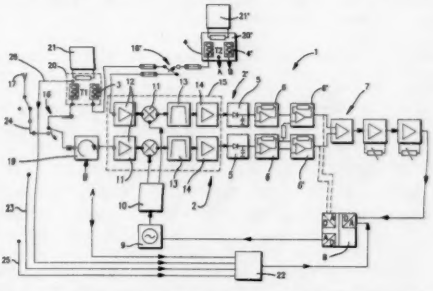
Michel Weiss, Gries; Laurent Martinache, Haguenau, and Olivier Gonella, Wissembourg, all of France, assignors to Bruker SA, Wissembourg, France

Division of application No. 08/517,415, Aug. 21, 1995, Pat. No. *5,741,071*. *This application Nov. 13, 1997, Appl. No. 969,539.*

Claims priority, application France, Aug. 19, 1994, 94 10235

Int. Cl.[6] G01K *7/30*

U.S. Cl. 374—175 **7 Claims**



2. A process for measuring a temperature of a body, comprising the steps of:

receiving two thermal noise signals continuously and simultaneously during the process of measuring the temperature of the body, a first one of the thermal noise signals representing a thermal noise from a first reference and a second one of the thermal noise signals representing the body thermal noise measured with a radiometric antenna;

processing each of the two thermal noise signals in a separate one of two identical and independent treatment paths of a double radio-frequency amplification chain to provide two separate continuous signals whose values are each proportional to a Power of a respective one of the thermal noise signals;

comparing the two continuous signals to determine in real time the temperature of the body; and

determining a frequency range to be avoided by the continuous signals by scanning a predetermined available frequency range by heterodyning the body thermal noise signal with a further signal and varying a frequency of the further signal to transpose a frequency of the body thermal noise signals, comparing the variably transposed signals to at least one reference that may be the same or different from the first reference, and determining the frequency range to be avoided based on the comparison.

5,909,964

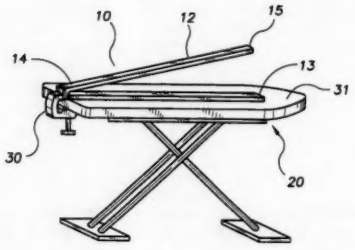
CREASE IRONING APPARATUS

David G. Johns, 6242 S. Port Dr., Flowery Branch, Ga. 30542

Filed Mar. 18, 1998, Appl. No. 40,608

Int. Cl.[6] D06F *71/30;85/00*

U.S. Cl. 38—1 B **6 Claims**



1. A Crease Ironing Apparatus useful for aligning and clamping fabric in a desired orientation providing a means for ironing straight creases, the apparatus comprising: a pair of elongated members each having two ends with one end of each member hingedly secured to the other, one elongated member includes an elongated trough section longitudinally positioned on the elongated member while a longitudinal transverse cross section of the member resembles a U, while the other elongated member is an extended rectangular member and has a longitudinal transverse cross section which resembles a rectangle and is dimensioned to be received along with fabric to be clamped within the elongated trough of the other elongated member, the hinged end of the elongated members allow a scissoring movement of the elongated members to a closed fabric clamping position wherein the elongated rectangular member moves into the elongated trough when the members are brought together thereby clamping fabric which has been placed between the rectangular member and the elongated trough, and an open position wherein the elongated rectangular member is scissored out of the elongated trough when the members are hingedly moved apart, and a fabric clamping securing means which means secures the rectangular elongated member in the elongated trough in the closed fabric clamping position when the two members are scissored together.

5,909,965

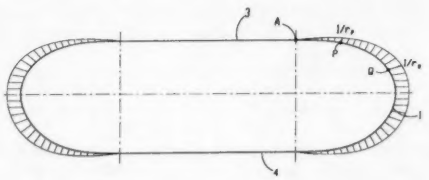
RECIRCULATION PATH UNIT FOR LINEAR ROLLING BEARINGS

Kou-I Szu; Kuo-Jung Chang; Shyh-Shiuh Lih, and Wu-Chang Hsu, all of Taichung, Taiwan, assignors to Hiwin Technologies Corp., Taichung, Taiwan

Filed Sep. 12, 1997, Appl. No. 928,646

Int. Cl.[6] F16C *29/06*

U.S. Cl. 384—43 **9 Claims**



1. A recirculation path unit for rolling elements, comprising a linear loading passage, a linear unloading passage, and two direction reversing passages connecting ends of the linear loading and *unloading passages to form a recirculation path for the rolling* elements,

wherein slopes of said linear and direction reversing passages vary continuously at connection points between the linear and direction reversing passages, and

wherein curvatures of said linear and direction reversing passages vary continuously throughout said recirculation path.

5,909,966

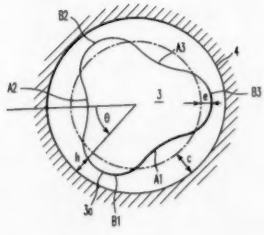
SELF-ACTING AIR BEARING

Mitsuo Suzuki; Yukio Itami, both of Kanagawa, and Kyousuke Ono, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of application No. 08/575,889, Dec. 20, 1995, abandoned. This application Oct. 20, 1997, Appl. No. 954,060.

Int. Cl.[6] F16C *32/06*

U.S. Cl. 384—115 **7 Claims**



1. A device having a self-acting air bearing, comprising:

a housing;

a shaft member vertically fixedly supported in said housing, so as not to rotate within said housing;

a cylindrical member installed around the shaft member coaxially and rotatably, a rotation of the cylindrical member generating a dynamic air pressure and thereby the cylindrical member is floatingly supported from the shaft member; and

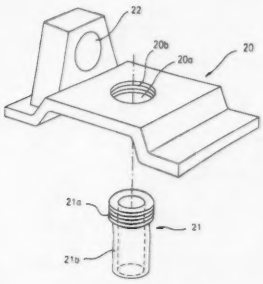
an axial magnetic bearing means positioned above said shaft member for floatingly supporting said cylindrical member;

wherein concavities and convexes are formed at a same interval in a peripheral direction in an outer peripheral surface of the shaft member, and a wave of one cycle between a beginning position of one of the concavities and an ending position of one of the convexes is a harmonic wave.

5,909,967
BEARING ENGAGEMENT STRUCTURE FOR HERMETIC COMPRESSOR

Byeong Gyu Lee, Changwon, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Nov. 12, 1997, Appl. No. 968,936
Int. Cl.[6] F16C *33/02*
U.S. Cl. 384—295 4 Claims



1. A bearing engagement structure for a hermetic compressor, comprising:

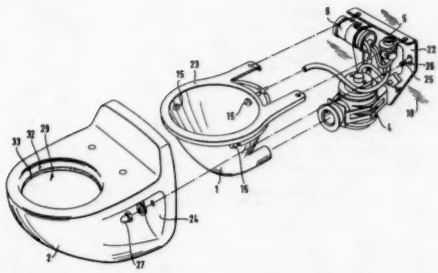
a unitary cylinder-frame member including an opening in a central portion thereof, said opening having an internal screw thread formed along an inner periphery thereof; and

a journal bearing including an external screw thread formed along an upper outer periphery thereof, and a body formed with a polygonal shape in a lower portion thereof.

5,909,968
VACUUM TOILET UNIT

Henry Olin, Espoo; Gunner Lindroos, Helsinki, and Roland Mattsson, Espoo, all of Finland, assignors to Evac International Oy, Helsinki, Finland

Filed Jul. 7, 1997, Appl. No. 889,620
Claims priority, application Finland, Jul. 9, 1996, 962791
Int. Cl.[6] E03D *11/00*
U.S. Cl. 4—431 19 Claims

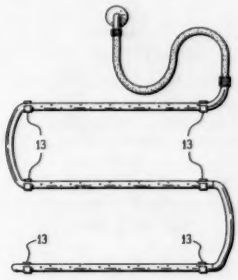


1. A vacuum toilet unit comprising a toilet bowl, operating means for the toilet function, said operating means including a sewer valve and a control device for controlling operation of the sewer valve, and the toilet unit also comprising an outer shell which encloses the toilet bowl and isolates the operating means from a user of the toilet bowl, wherein at least a substantial portion of the shell is removable from the toilet bowl without any substantial influence on the support of the bowl or said operating means in order to allow service access to the operating means and substantially all of the externally applied load exerted by a user of the toilet is carried by the shell.

5,909,969
FULL BODY SHOWER SYSTEM

Donald R. Davison, 359½ MacArthur Ave., Long Branch, N.J. 07740

Filed May 18, 1998, Appl. No. 80,779
Int. Cl.[6] A47K *3/20*
U.S. Cl. 4—569 8 Claims

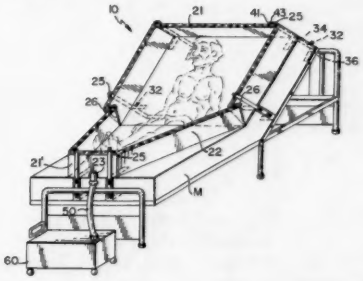


1. A full body shower system comprising: three generally horizontal spaced apart tubular portions, each of said horizontal tubular portions having two ends, and a plurality of apertures formed therein for permitting pressurized water to exit therefrom in a predetermined pattern; a first generally vertical tubular portion fluidly connecting one of said ends of said first of said generally horizontal tubular portions to one of said ends of said second of said generally horizontal tubular portions, a second generally vertical tubular section fluidly connecting the other of said ends of said second of said generally horizontal tubular portions to one of said ends of said third of said generally horizontal tubular portions, and means connected to the first of said generally horizontal tubular portions for connecting said full body shower system to a water source.

5,909,970
PORTABLE BATHING APPARATUS

Cristobal F. Velazquez, 6915 W. 15 Ave., Hialeah, Fla. 33014

Filed Sep. 18, 1998, Appl. No. 157,126
Int. Cl.[6] A47K *3/06*
U.S. Cl. 4—585 5 Claims



1. A bathing apparatus adapted to be removably mounted over a mattress having a peripheral lateral wall, comprising:

A) a semi-flexible and impermeable sheet having two ends, and said sheet having a peripheral edge portion with a fold;

B) a plurality of elongated supporting means adapted to be removably mounted to said mattress and extend substantially perpendicularly with respect to the plane of said mattress, and each of said elongated supporting means including a distal end extending upwardly above said mattress, and each of said elongated supporting means further including a clip that includes two spaced apart plates that cooperatively sandwich said peripheral lateral wall;

C) a cord that is passed through said fold, and said fold having exposed areas so that said cord can be removably attached to said distal ends at said exposed areas; and

D) draining means mounted to one of said ends and below said peripheral edge.

5,909,971

DISPLAY DEVICE WITH DISK AND LED

Veso S. Tijanic, Mississauga, Canada, assignor to Mark IV Industries Limited, Mississauga, Canada

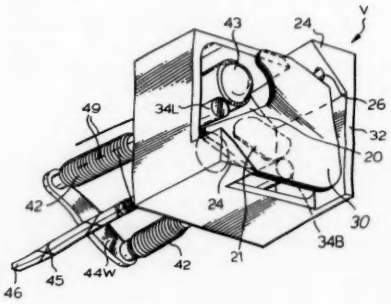
Continuation of application No. 08/684,064, Jul. 19, 1996, Pat. No. 5,771,616. This application Apr. 24, 1998, Appl. No. 65,572.

Claims priority, application Canada, Mar. 1, 1996, 2170842

This patent is subject to a terminal disclaimer

Int. Cl.[6] G09F *9/37*

U.S. Cl. 40—449 **3 Claims**



1. Display element for viewing in a viewing direction, comprising a stator and a rotor,

said rotor being a disk mounted on said stator to rotate about an angle between ON and OFF limiting positions about an axis generally perpendicular to the viewing direction,

said rotor displaying bright and dark sides in said viewing direction in ON and OFF limiting positions, respectively,

means for causing rotation of said disk about a rotation axis between ON and OFF limiting positions,

an LED mounted on the stator having a lens with a forward end projecting forwardly therefrom,

said lens projecting forwardly of said disk when the latter is in ON position and with said LED rearwardly of said disk.

5,909,972

BRAILLE FORMING APPARATUS FOR FORMING WIDE PATTERNS AND LINES

Hirotoshi Kotoh, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 15, 1997, Appl. No. 893,229

Claims priority, application Japan, Jul. 19, 1996, 8-209299

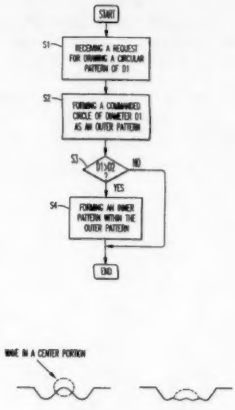
Int. Cl.[6] B41J *3/32*

U.S. Cl. 400—109.1 **24 Claims**

1. A braille forming method for forming a desired braille pattern on a sheet by contacting a pen tip against the sheet, comprising the steps of:

determining if the desired braille pattern exceeds a first predetermined size;

forming the desired braille pattern with a first pattern if it is determined that the desired braille pattern does not exceed the first predetermined size; and



forming the desired braille pattern with a second pattern, different from the first pattern, if it is determined that the desired braille pattern does exceed the first predetermined size.

5,909,973

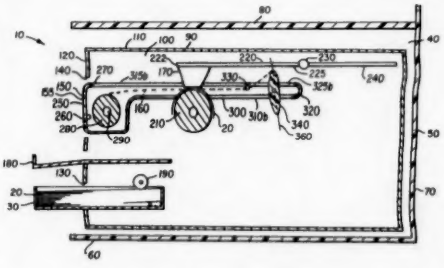
INK RIBBON CARTRIDGE WITH AN ELLIPTICAL TAKE-UP SPOOL

Michael J. Siwinski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 26, 1997, Appl. No. 938,868

Int. Cl.[6] B41J *32/00*

U.S. Cl. 400—208 **10 Claims**



1. For use in a thermal resistive printer, a dye cartridge, comprising:

(a) a case having an enlarged portion defining a chamber therein and having a plurality of spaced-apart parallel tines integrally connected to the enlarged portion;

(b) a first spool disposed in the chamber;

(c) a second spool interposed between the tines, said second spool having a non-round transverse cross section defining an axis thereof; and

(d) a biasing mechanism in association with said second spool for biasing said second spool, so that the axis thereof lays in a preferred direction.

5,909,974

METHOD FOR PRINTING IN A DRAFT MODE OF A SERIAL PRINTER

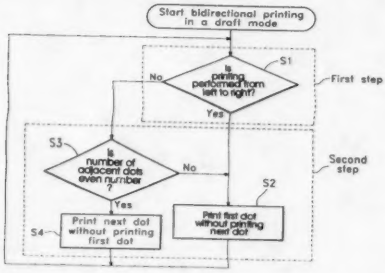
Ho-Suck Myung, Kyonggi-do, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 19, 1997, Appl. No. 933,850

Claims priority, application Rep. of Korea, Sep. 19, 1996, 96-40894

Int. Cl.*[6] *B41J 19/00

U.S. Cl. 400—283 **15 Claims**



1. A method for printing information data in a draft mode of a serial printer, comprising:

a first step of printing information data in a first direction on a first line; and

a second step of print information data in a second direction opposite of said first direction on a second line, said second step comprising the steps of:

determining the number of dots corresponding to said information data to be printed; and

aligning the dots to be printed corresponding to said first and second lines in a predetermined form after determining the number of dots corresponding to said information data to be printed, with the dots of said information data on said first and second lines that correspond to each other being vertically aligned;

wherein, a first dot of said information data is not printed and a next dot of said information data is printed, when the number of dots corresponds to an even number.

5,909,975

MULTIPLEX WRITING IMPLEMENT

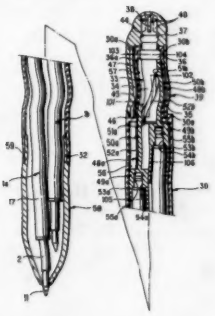
Seiichi Kobayashi, Yokohama, Japan, assignor to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1997, Appl. No. 943,074

Claims priority, application Japan, Dec. 25, 1996, 8-355822

Int. Cl.*[6] B43K *27/00;7/01;24/14

U.S. Cl. 401—30 **2 Claims**



1. A multiplex writing implement having two writing elements, each writing element having a tip end, at least one of the two writing elements is a ball point pen writing element comprising:

a front end and a rear end;

a point assembly having a tip ball held in a ball holding portion at the tip end at the front end and a spring arranged to urge the tip ball into sealing contact with an inner rim of the ball holding portion and to release sealing contact with the rim during writing;

a rigid ink reservoir disposed behind and in fluid communication with the point assembly and having a cross-section larger than a cross-section of the point assembly;

a quantity of ink in the ink reservoir supplying the tip ball in the point assembly, the ink selected from the group consisting of a thixotropic, water-soluble ball point ink and a low-viscosity oil-based ink having a viscosity that decreases as the tip ball rolls during writing to allow smooth distribution of ink; and

a translucent, non-drying greasy material ink follower disposed at a rearwardly facing surface of the quantity of ink, the ink follower movable in contact with the rearwardly facing surface as *the quantity of ink is consumed through the point* assembly;

the writing implement further comprising:

a barrel cylinder having a front end and a rear end, the barrel cylinder having a front barrel with a tip opening at the front end, the barrel cylinder having a middle barrel connected to the front barrel, a front portion of the middle barrel having an elliptical cross-sectional shape with a long diameter and a short diameter, a cylindrical rear portion of the middle barrel having a round cross-section and a bore, *the barrel* cylinder having a rear barrel closely fitted over a rear portion of an outer surface of the cylindrical rear portion of the middle barrel, the rear barrel rotatable relative to the middle barrel;

a forwardly directed rotary shaft integrally attached inside of the rear end of the rear barrel, the rotary shaft disposed in the cylindrical rear portion of the middle barrel such that it is rotatable 180° with respect to the middle barrel in response to rotation of the rear barrel, *the rotary shaft* having a pair of radially outwardly opening cam grooves;

a pair of sliding members each having a front part supported in the front portion of the middle barrel having the elliptical cross-sectional shape, each front part having a front end; the sliding members arranged opposite to each other such that each is intersected by the long diameter of the elliptical cross-sectional shape, the front part of each sliding member *in sliding contact with a corresponding portion of an inner* peripheral wall of the front portion of the middle barrel having the elliptical cross-sectional shape, each of the pair of sliding members having a rear part, each rear part of the pair of sliding members having a radially inwardly directed cam projection, each cam projection positioned opposite the other, and each cam projection slidably engaging one of the pair of cam grooves such that the rotation of the rotary shaft in response to rotation of the rear barrel causes the sliding members to alternately move forward and rearward only; and

wherein a front portion of the rear barrel has an elliptical cross-sectional shape having a long diameter and a short diameter, the elliptical cross-sectional shape of the front portion of the rear barrel having the same dimensions as the elliptical cross-sectional shape of the front portion of the middle barrel;

an edge portion extends rearwardly from a portion of a side of a rear end of the front portion of the middle barrel, the edge adjacent the long diameter of the elliptical cross-sectional shape of the front portion of the middle barrel;

a clip having a front end is provided on a side of the rear barrel aligned with the short diameter of the elliptical cross-sectional shape of the front portion of the rear barrel, the clip movable from a first position to a second position when the rear barrel is rotated with respect to the middle barrel; in the first position, the clip is aligned with the short diameter of the elliptical cross-sectional shape of the middle barrel and both writing element tips are positioned within the barrel cylinder such that the clip can be hooked into a pocket; and in the second position, the clip is aligned with the long diameter of the elliptical cross-sectional shape of the middle barrel, the tip end of one of the writing

elements is projected from the tip opening, and the front end of the clip engages an inwardly directed surface of the edge portion of the rear end of the middle barrel such that the clip cannot be hooked into a pocket; and

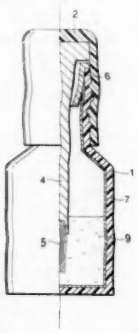
wherein each of the writing elements is flexibly attached to the front end of one of the pair of sliding members such that the tip end of each of the two writing elements can be selectively deflected radially inwardly and projected from the tip opening of the barrel cylinder.

5,909,976

BRUSH-EQUIPPED CONTAINER FOR CYANOACRYLATE ADHESIVE

Tetsuro Maeda, Tokyo, Japan, assignor to Three Bond Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1998, Appl. No. 14,564
Claims priority, application Japan, Jan. 28, 1997, 9-049571
Int. Cl.*[6] *A46B 11/00
U.S. Cl. 401—129 **14 Claims**



1. A brush-equipped container for a cyanoacrylate adhesive, said container comprising:

a container main body comprising a polyolefin resin; and

a cap for capping said container main body, which has a brush member provided on the inner side of said cap so that said brush member is housed in said container main body, said brush member comprising a handle and bristles,

wherein at least the container main body is coated with a gas-impermeable coating material which is insoluble in the cyanoacrylate and which has poor adhesion property with respect to the cyanoacrylate.

5,909,977

DENTIFRICE DISPENSING TOOTHBRUSH WITH REFILLABLE CARTRIDGE

Youti Kuo, 88 Foxbourne Rd., Penfield, N.Y. 14526

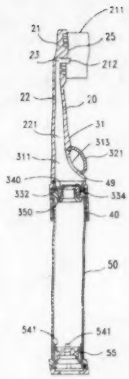
Filed Mar. 31, 1997, Appl. No. 829,242
Int. Cl.*[6] *B43K 5/02
U.S. Cl. 401—146 **10 Claims**

1. A refillable dentifrice dispensing toothbrush comprising:

a. a brush head having a platform with an outlet opening therethrough and a series of bristles which are attached to the platform;

b. a pump assembly comprising:

i. a pump chamber having (a) a base having an interior surface, an exterior surface having a recess wall and an opening therethrough, (b) a side wall having an opening therethrough, and (c) a top comprising an opening which is in communication with the outlet opening through the platform of the brush head;



ii. a depressible pump actuator attached to the side wall opening of the pump chamber for supplying a pumping force to dentifrice material stored in the pump chamber when the pump actuator is depressed;

iii. a flap check valve attached to the interior surface of the base for closing the opening in the base when the pump actuator is depressed;

c. a handle housing adapted for attachment of a refillable cartridge for storing dentifrice material, said handle housing being defined by a top which is attached to the exterior surface of the pump chamber, an open bottom and a side wall extending from the top to the open bottom;

d. a refillable cartridge containing dentifrice material which is adapted to be attached to the handle housing, said refillable cartridge being comprised of:

i. a cylindrical tube having an inner surface and an outer surface, said cylindrical tube terminating at a bottom opening end having a base and a top opening end which is in communication with the opening in the base of the pump chamber when the refillable cartridge is attached to the handle housing, said top opening end having a peripheral annular lip positioned around the top opening;

ii. a two-way follower disc positioned inside the cylindrical tube, said follower disc having an upper annular rim and a lower annular rim positioned to form a sliding fit against the inner surface of the cylindrical tube for sealing dentifrice material;

iii. a plurality of vent grooves positioned on the inner surface of the cylindrical tube and extending to the bottom open end, the length of the vent grooves being greater than the height of the follower disc, and the depth of said vent grooves being sufficiently small to prevent the flow of dentifrice material therethrough.

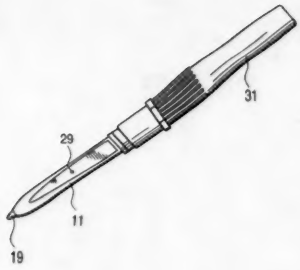
5,909,978

MARKER PEN

Edward Giordano, Peachtree City; Howard A. Mercer, Fayetteville, and John R. Miller, Woodstock, all of Ga., assignors to Porex Surgical Inc., College Park, Ga.

Filed Nov. 15, 1993, Appl. No. 151,891
Int. Cl.*[6] *B43K 8/02;8/04
U.S. Cl. 401—188 A **11 Claims**

1. A marking pen comprising a flexible body defining a cavity containing ink for the marker pen, an opening in the distal end of said body, a pen nib mounted in said opening, means to supply ink from said cavity to said pen nib, a vent hole in the flexible walls of said body positioned so that said body can be squeezed with a



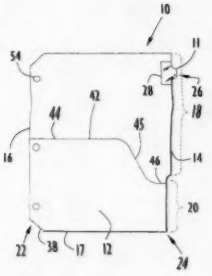
finger covering the vent hole to apply pressure to said cavity to flush said nib with ink.

5,909,979

ONE-PIECE MACHINABLE INDEX DIVIDER WITH INTEGRAL POCKET

Debra Winzen, Chesterfield, Mo., assignor to Calvert Holdings LLC, Baltimore, Md.

Filed Jan. 30, 1998, Appl. No. 16,285
Int. Cl.[6] B42F *13/00*
U.S. Cl. 402—79 **15 Claims**



1. A divider for insertion in a binder having at least one retainer, said divider comprising:

a one-piece panel having an integral pocket with a transverse fold line defining a bottom edge of said integral pocket;

said integral pocket including a first side connection opposing a second side connection;

said one-piece panel having a retainer side contiguous with and disposed substantially transversely to said pocket bottom edge, and a tab side opposing the retainer side with a transversely projecting integral tab;

said panel tab side including a protruding area and a recessed area contiguous with the protruding area, wherein said recessed area is also contiguous with said pocket bottom edge, said protruding area projecting beyond said recessed area;

said pocket being attached to said panel, proximate said retainer side, by said first side connection;

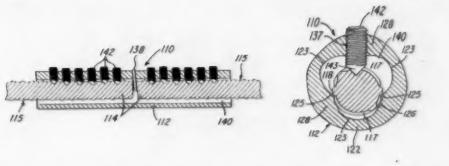
said pocket being attached to said panel, proximate said tab side, by said second side connection.

5,909,980

TUBULAR COUPLER FOR CONCRETE REINFORCING BARS

Steven E. Holdsworth, Centerville, Ohio, assignor to Barsplice Products, Inc., Beavercreek, Ohio

Continuation-in-part of application No. 08/668,419, Jun. 17, 1996, Pat. No. 5,664,902, which is a continuation of application No. 08/378,484, Jan. 26, 1995, abandoned. This application Sep. 8, 1997, Appl. No. 925,840.
This patent is subject to a terminal disclaimer
Int. Cl.[6] B25G *3/34*
U.S. Cl. 403—362 **14 Claims**



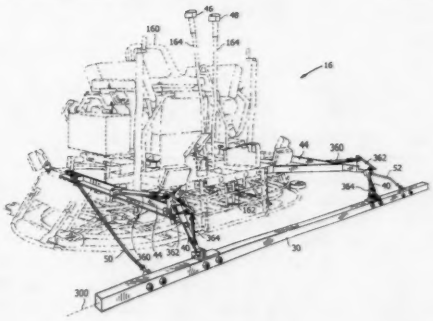
1. In combination with a generally cylindrical concrete reinforcing bar having a longitudinal axis and outwardly projecting ribs, an improved coupler for positively gripping an end portion of said bar, said coupler comprising an elongated tubular metal body, said tubular body including a longitudinally extending wedge portion having longitudinally extending and generally opposing and converging inner wedging surfaces defining a wedging seat for said end portion of said bar, said tubular body receiving said end portion of said reinforcing bar with said wedging surfaces engaging said end portion and said ribs along a length substantially longer than the diameter of said bar and on one side of a plane extending through the longitudinal axis of said bar, a series of longitudinally spaced threaded holes within said body in generally opposing relation to said wedge portion, a corresponding series of screws threaded into said holes and having inner end portions penetrating and deforming said end portion of said bar, and said end portion of said bar is wedged into said inner wedging surfaces in response to the substantial force exerted by said screws to form a high strength positive connection between said body and said end portion of said bar.

5,909,981

BUMP CUTTING FOR WIDE-POUR CONCRETE FLOORS

Joseph F. Neuber, Jr., Kimberton, Pa., assignor to Neuber Concrete, A Division of J. F. Neuber Jr. General Contractor, Inc., Kimberton, Pa.

Filed Aug. 25, 1997, Appl. No. 920,198
Int. Cl.[6] E01C *19/22*
U.S. Cl. 404—112 **13 Claims**



1. A method of finishing a concrete floor that exceeds approximately 50 feet in width, comprising the steps of:

positioning a riding trowel on said concrete floor;

driving said riding trowel on said concrete floor in a direction of travel wherein a windrow of loosened concrete material is formed in the wake of said riding trowel along said direction of travel;

coupling a straight edge to said riding trowel for corresponding movement with said riding trowel in said direction of travel, wherein said straight edge has a central longitudinal axis maintained substantially parallel to said concrete floor;

positioning said straight edge on said concrete floor from said riding trowel so that said straight edge crosses said windrow at a substantially perpendicular angle thereto;

pivoting said straight edge about said central longitudinal axis to a desired position from said riding trowel; and

applying an independent continuously controllable downward pressure from said riding trowel along said straight edge pivoted to said desired position, wherein said straight edge smoothes said windrow during said step of driving.

5,909,982

LARGE-DEPTH UNDERGROUND DRAINAGE FACILITY AND METHOD OF RUNNING SAME

Kunio Takada, Ibaraki-ken; Kenji Otani; Masayuki Yamada, both of Tsuchiura; Saburo Maru, Ibaraki-ken; Sumio Sudo, Ibaraki-ken, and Sadashi Tanaka, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 08/552,840, Nov. 3, 1995, Pat. No. 5,634,740, which is a continuation of application No. 08/192,289, Feb. 4, 1994, Pat. No. 5,487,621, which is a continuation-in-part of application No. 07/988,755, Dec. 10, 1992, Pat. No. 5,360,290, and a continuation-in-part of application No. 07/900,418, Jun. 18, 1992, Pat. No. 5,360,289. This application Mar. 20, 1997, Appl. No. 821,314.

Int. Cl.[6] **E02F** *1/00;* **E02B** *11/00*

U.S. Cl. 405—52 **25 Claims**

1. A large-depth underground drainage facility comprising an underground water channel in an underground location at a great depth and into which drain water flows from drainage channels; a vertical water channel; a pumping tank, the bottom of said pumping tank being above the depth of said underground water channel and communicating through said vertical water channel with a downstream end of said underground water channel; a vertical discharge channel having an outlet near the ground surface; and a drainage pump for drawing water from said pumping tank and pumping the drawn water through said vertical discharge channel to said outlet, said drainage pump being disposed at substantially the level of said bottom of said pumping tank and having a pump suction port communicating with said pumping tank and disposed to pump water from substantially the level of the bottom of said pumping tank.

5,909,983

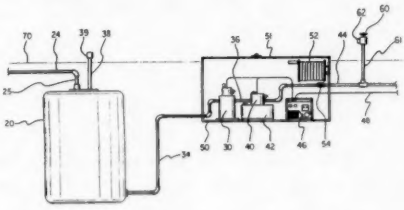
EMERGENCY WATER RESERVOIR APPARATUS

Wallace M. McGee, Jr., 25582 Paseo La Vista, Laguna Niguel, Calif. 92677

Filed Feb. 21, 1997, Appl. No. 804,738

Int. Cl.[6] **A62C** *35/68*

U.S. Cl. 405—54 **1 Claim**



1. An emergency water reservoir apparatus for supplying water and infusion chemicals to extinguish fires, said emergency water reservoir apparatus comprising:

a subterranean water storage tank having an interior reservoir, said storage tank having an outlet conduit extending from said interior reservoir, a first end of said outlet conduit being in fluid communication with said interior reservoir;

a water hydrant valve having a hose quick fitting means for removably attaching a water hose thereto, said water hydrant valve being coupled to a second end of said outlet conduit, said water hydrant valve being in fluid communication with said outlet conduit;

a water intake conduit having a reservoir end, said intake conduit being in fluid communication with an established water supply, said reservoir end being in fluid communication with said interior reservoir to permit delivery of water to said interior reservoir from an established water supply system;

a substantially subterranean housing having a medial portion of said outlet conduit passing through an interior thereof and further exiting a side wall thereof;

a pair of access panels forming a top of said housing, each of said access panels being hingedly coupled to opposite ends of said housing for providing access to the interior of said housing;

wherein said water hydrant valve includes a vertical portion extending upwardly from said outlet conduit exterior of said housing such that said water hydrant valve is elevated with respect to said access panels of said housing and laterally spaced therefrom;

a water hose storage apparatus positioned in the interior of said housing adjacent the top of said housing, said water hose storage apparatus being mounted on said side wall of said housing adjacent to the top of said housing for allowing said water hose to be stored thereon about a horizontal axis;

a water intake cut-off means being included within said reservoir end, said water intake cut-off means being for preventing water from entering said interior reservoir from said water intake conduit when water in said interior reservoir reaches a certain volume;

an anti-siphon valve means being included within said reservoir end, said anti-siphon valve means being for preventing water within said interior reservoir from draining back into said water intake conduit;

a venting conduit being extended from said water tank, said venting conduit providing a vent to said interior reservoir;

a water pump means positioned in an interior of said housing, said water pump means being in fluid communication with said outlet conduit between said interior reservoir and said water hydrant valve, said water pump means being for pumping water from said interior reservoir to said water hydrant valve;

an infusion pump means positioned in the interior of said housing, said infusion pump means having an infusion reservoir member and an adjustable infusion dispensing means, said infusion pump means being in fluid communication with said outlet conduit between said water hydrant valve and said

water pump means, said infusion reservoir member providing infusion chemicals to said infusion pump means, said infusion pump means being for providing infusion chemicals into water passing through said outlet conduit from said interior reservoir to said water hydrant valve, said adjustable infusion dispensing means being for allowing a user to adjust the amount of *infusion chemicals said infusion pump means* provides into water passing through said outlet conduit to said water hydrant valve;

a water cut-off valve positioned in the interior of said housing, the water cut-off valve being in fluid communication with said outlet conduit between said infusion pump means and said water hydrant valve, said water cut-off valve providing a cut-off float switch to close fluid communication between said interior reservoir and said water hydrant valve;

an electrical power generator positioned in the interior of said housing, said electrical power generator being electrically coupled to said water pump means and being electrically coupled to said infusion pump means, said electrical power generator providing power to said water pump means and to said infusion pump means; and

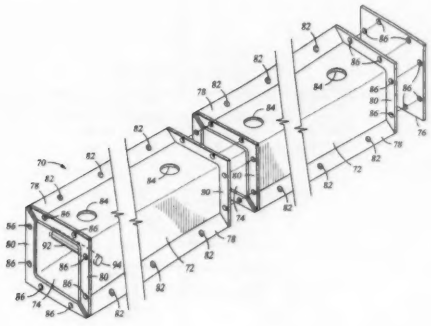
wherein the water hose includes a quick fitting means positioned at one end, said one end being in fluid communication with said water hydrant valve, said quick fitting means being for removably attaching said one end of said water hose to said hose quick fitting means of said water hydrant valve.

5,909,984

PILE FORMING SYSTEM AND METHOD OF USING THE SAME

Mike R. Matthews, 1402 Valley Landing, Katy, Tex. 77470

Filed Feb. 15, 1997, Appl. No. 806,037
Int. Cl.[6] E02D *5/30;* **E04G** *13/02*
U.S. Cl. 405—257 **19 Claims**



1. A pile form comprising:

a) a bottom pile forming member comprising bottom flanges disposed at each end;

b) a top pile forming member comprising a hole on a top surface and top flanges disposed at each end; the top pile forming member and the bottom pile forming member defining the outer surface of a pile; the top pile forming member and the bottom pile forming members releasably secured to one another such that a cavity having a cross section resembling the cross section of the pile is created between the top pile forming member and the bottom pile forming member; wherein the top and bottom flanges of each end of the pile forming members comprise a first connecting flange disposed at a first end of the pile forming members and a second connecting flange disposed at a second end of the pile forming members; and

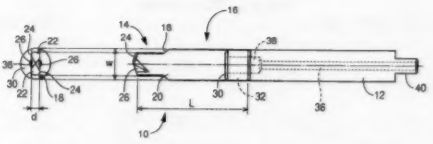
c) an end plate secured to one of the first or second connecting flanges.

5,909,985

DRILL HAVING PLATE-LIKE CUTTER MEMBER FIXED AT PROXIMAL END TO SHANK AND HAVING CUTTING EDGE AT DISTAL PORTION

Kiyotaka Shiga, Okazaki; Akio Fukui, Toyohashi; Kazuaki Terada, Toyota; Takahiro Yamada, Anjo; Haruyasu Toyoda; *Masashi Miyake, both of Toyota, and Akihiro Umeda,* Chiryu, all of Japan, assignors to Fuji Seiko Limited, Toyota, Japan

Filed May 5, 1997, Appl. No. 841,809
Claims priority, application Japan, May 8, 1996, 8-113305
Int. Cl.[6] B23B *35/00;51/06;* **B23P** *15/32*
U.S. Cl. 408—1 R **23 Claims**



1. A drill including a cutter member and a shank which are formed separately from each other and fixed to each other for rotation as a unit, wherein an improvement comprises:

said shank having an engaging groove formed in a distal end face thereof such that said engaging groove extends in an axial direction of said shank and is aligned with a center of said distal end face; and

said cutter member comprising a rectangular plate including a proximal end portion fixed to said shank by engagement thereof with said engaging groove, and a distal end portion which is remote from said shank and which has at least one cutting edge, said rectangular plate having a width not larger than a diameter of said shank.

14. A drill including a cutter member and a shank which are formed separately from each other and fixed to each other for rotation as a unit, wherein an improvement comprises:

said shank having an engaging groove formed in a distal end face thereof such that said engaging groove extends in an axial direction of said shank and is aligned with a center of said distal end face; and

said cutter member comprising an elongated plate including a proximal end portion fixed to said shank by engagement thereof with said engaging groove, and a distal end portion which is remote from said shank and which has at least one cutting edge, said elongated plate having a first width which is not larger than a diameter of said shank, and a total axial length which is two to seven times said first width, said distal end portion of said cutter member being provided with thinnings so as to reduce a chisel edge at a line of intersection between two flanks which are formed at a tip of said distal end portion.

23. A method of drilling a hole in a workpiece by a drill including a cutter member and a shank which are formed separately from each other and fixed to each other for rotation as a unit, wherein said cutter member comprises an elongated plate including a proximal end portion fixed to said shank by engagement thereof with an engaging groove formed in an axial direction of said shank, and a distal end portion which is remote from said shank and which has at least one cutting edge, wherein said proximal end portion has a first width which is constant in said axial direction, while said distal end portion includes a part having a second width which is substantially equal to a diameter of a hole to be drilled in a workpiece but smaller than said first width and which is constant in said axial direction, and wherein said proximal end portion includes an engaging part and an exposed part which is located closer to said distal end portion, said engaging part having an axial length equal to an axial depth of said engaging groove so as to be fitted in said engaging groove, said exposed part having a predetermined axial length so that shoulder portions which connect said distal end portion and said proximal end portion are axially distant from said distal end face of said shank by a distance equal to said predetermined axial length, said method comprising:

a step of drilling the hole in the workpiece by penetration of said distal end portion into said workpiece, without said exposed part being penetrated into said workpiece.

5,909,986

BORING HEAD WITH SIMULTANEOUS CLAMPING

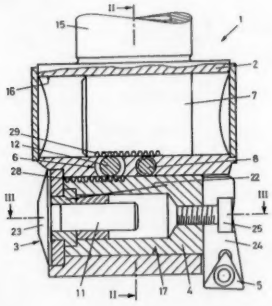
Heinz Kaiser, Wallisellen, and Dieter Pape, Rümlang, both of Switzerland, assignors to Heinz Kaiser AG, Rumlang, Switzerland

Filed May 2, 1997, Appl. No. **848,958**

Claims priority, application Switzerland, May 2, 1996, 1109/96

Int. Cl.[6] B23B 29/10

U.S. Cl. 408—181 **27 Claims**



1. A boring head, comprising:

(a) a tool body;

(b) a fine adjustment mechanism for adjusting position of a tool support;

(c) a counterweight, mounted in the tool body;

(d) a transmission device, adapted to automatically move the counterweight in an opposite direction upon movement of the tool support by the fine adjustment mechanism to provide imbalance compensation; and

(e) a clamping organ adapted to engage with the tool support and the counter weight to simultaneously clamp the tool support and the counterweight when a setting for the fine adjustment mechanism is selected.

5,909,987

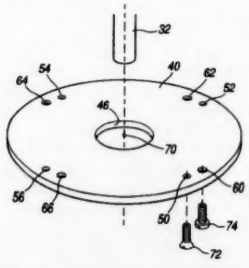
ADJUSTABLE SUB-BASE FOR FIXED-BASE ROUTER

John R. Coffey; Lawrence M. Cotton, both of New Bern, N.C., and Carl Christian Carlson, Vernon Hills, Ill., assignors to S-B Power Tool Company, Chicago, Ill.

Filed Jun. 24, 1998, Appl. No. 103,409

Int. Cl.[6] B23C *1/20*

U.S. Cl. 409—131 **12 Claims**



9. A method for centering a sub-base relative to a fixed-base router where said sub-base if originally connected to said router by a set of flat-head screws comprising the steps of:

providing said fixed-base router, a set of pan-head screws, a cone element adapted to be mounted to said router and said router sub-base being connected to said router with flat-head screws, said sub-base having a central opening and first and second sets of peripheral openings;

removing said flat-head screws connecting said sub-base and said router through said first set of openings;

loosely mounting said sub-base to said router with said pan-head screws through said second set of openings;

connecting said cone element to said router;

engaging said cone element and said central opening of said sub-base until said cone element is centered in said central opening;

tightening said pan-head screws to adjustably fix said sub-base to said router in the position located by said cone element;

removing said cone element from said router; and

connecting router bit to said router.

5,909,988

UNIVERSAL COMBINED MILLING AND BORING MACHINE

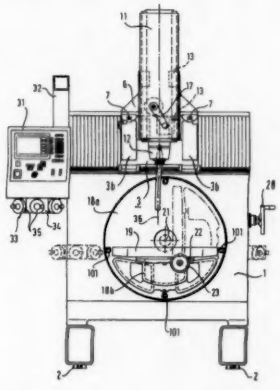
Gerd Hoppe, Habichtswald; Alfred Geissler, Pfronten, and Karl-Heinz Schäfer, Füssen, all of Germany, assignors to Deckel Maho GmbH, Pfronten, Germany

Filed Oct. 9, 1997, Appl. No. 947,992

Claims priority, application Germany, Oct. 10, 1996, 196 41 831

Int. Cl.[6] B23Q *1/25*

U.S. Cl. 409—198 **11 Claims**



1. A universal combined milling and boring machine having a center axis, said machine comprising:

a machine column;

a compound slide mounted to traverse horizontally on said machine column;

a spindle head mounted to traverse vertically on said compound slide;

a work spindle on said spindle head; a supporting console on said machine column, said supporting console being mounted for rotation about a horizontal swivel axis on said machine column, the swivel axis being laterally offset relative to the center axis of said combined milling and boring machine;

a rotary table mounted for pivoting over said supporting console, said rotary table being mounted for rotation about an axis of rotation normal to the swivel axis at the center of said supporting console; and

a control unit having a separable portable control console.

5,909,989

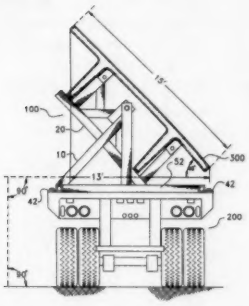
LOADING FIXTURE

Kenneth C. Baur, Mohnton; Kathleen M. Scholz, Shillington; William L. Whary, Mohnton, and Rand Henry, Nottingham, all of Pa., assignors to High Concrete Structures, Inc., Denver, Pa.

Continuation of application No. 08/639,783, Apr. 29, 1996, Pat. No. 5,683,213. This application Nov. 4, 1997, Appl. No. 962,959.

Int. Cl.[6] B60P *7/08*

U.S. Cl. 410—44 **9 Claims**



1. A loading fixture suitable for transporting cargo, comprising a support frame and a swivelling structure pivotally mounted to said support frame, said swivelling structure disposed to contact and rotate said cargo from a first loading position to a second transporting position tilted from said loading position for reducing the effective width of said cargo relative to a transport surface, wherein said swivelling structure is pivotally mounted to rotate about a first axis located at approximately the center of gravity of said cargo.

5,909,990

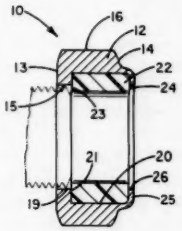
THREADLESS NUT

Joseph Gombos, 70 Wimborne Avenue, Hayes, Middlesex UB4 0HH, United Kingdom

Filed Jul. 16, 1998, Appl. No. 116,986

Int. Cl.[6] F16B *37/08;39/34*

U.S. Cl. 411—302 **1 Claim**



1. A threadless nut for permitting threadable extension of variously pitched threaded bolts therethrough, comprising:

a body having a center axis, opposite first and second faces, and inner and outer side surfaces, said inner surface being generally smooth;

said outer side surface being generally polygonal and having a number of generally flat sides, wherein said outer surface is generally hexagonal said sides of said outer surface being for engaging jaws of a wrench holding and turning said threadless nut;

said inner side surface of said body defining a bore through said body between said first and second faces of said body, said bore having a center axis, said center axis of said bore and said center axis of said body being coaxial;

said inner side surface of said body having first and second portions, said first and second portions of said inner side surface of said body each being generally cylindrical and having a center axis and a diameter, said center axes of said first and second portions of said inner side surface of said body being coaxial with said center axis of said body;

said first portion of said inner side surface being positioned adjacent said first face of said body, said second portion of said inner side surface being positioned adjacent said second face of said body;

said diameter of said second portion of said inner side surface being greater than said diameter of said first portion of said inner side surface such that an annular shoulder is formed between said first and second portions of said inner side surface;

an annular liner being provided on said second portion of said inner side surface, said liner having a center axis, inner and outer diameters;

said center axis of said liner being coaxial with said center axis of said body;

said inner diameter of said liner being less than said diameter of said first portion of said inner side surface, said outer diameter of said liner being greater than said diameter of said first portion of said inner side surface;

said liner having a first end abutting said shoulder formed between said first and second portions of said inner side surface, said liner having a second end being positioned adjacent said second face of said body;

said second face of said body having an annular flange radiating inwards towards said center axis of said body and into an opening of said bore, said annular flange having an L-shaped cross-section including an inboard extent extending from said second face of said body in perpendicular relationship therewith and an outboard portion extending inwards towards said center axis, wherein said inboard extent and said outboard extent have a common uniform thickness, said inboard extent of said annular flange having a diameter being generally equal to said diameter of said second portion of said inner side surface, said annular flange having an inner edge having a diameter being generally equal to said diameter of said first portion of said inner side surface;

said annular flange abutting said second end of said liner;

wherein a width of said liner is greater than said first portion of said inner side surface; and

wherein said liner comprises a malleable material including a polymeric resin compound that is adapted to be engaged by threads of the threaded bolt threadedly extended into said bore of said body such that the bolt is securely held to said nut.

5,909,991

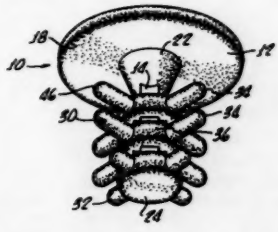
SELF ADJUSTING PLUG

Michael P. Manion, and Donald M. Brown, both of Los Angeles, Calif., assignors to Arrow Sign Company, Los Angeles, Calif.

Filed Nov. 24, 1997, Appl. No. 977,462

Int. Cl.[6] A47G *3/00;* **F16B** *19/00*

U.S. Cl. 411—377 **8 Claims**



1. A plug, comprising:

a top member having a first side and a second side;

a shaft having a first end and a second end, the first end of the shaft being connected to the first side of the top member;

at least a first ring on the shaft and extending outwardly from the shaft; and

a plurality of projections attached to the first ring and extending outwardly from the first ring, the projections being spaced from one another such that adjacent projections do not abut one another.

5,909,992

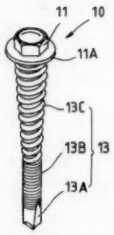
SELF-TAPPING SCREW FOR FASTENING A METAL CORRUGATED BOARD

Tsan-Hsing Wu, No. 42, Kee Koou St., Shin Her Tsun, Shin Shyh Hsiang, Tai-Nan Hsien, Taiwan

Filed Jul. 2, 1998, Appl. No. 109,068

Int. Cl.[6] F16B *25/00;35/04*

U.S. Cl. 411—387 **3 Claims**



1. A self-tapping screw having a head, and a threaded shank fastened at one end thereof with said head and provided at another end thereof with a blade fastened therewith; wherein said threaded shank is provided with a first threaded portion contiguous to said blade, and a second threaded portion contiguous to said head and greater in tooth pitch and tooth depth than said first threaded portion, wherein said second threaded portion is of a tapered construction.

5,909,993

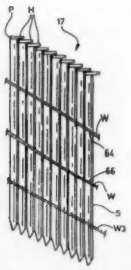
CHIPPED NAIL WELDED WIRE NAILING STRIP AND METHOD

Walter H. Leistner, Scarborough, Canada, assignor to Sigma Tool & Machine, Scarborough, Canada

Filed Nov. 12, 1997, Appl. No. 969,067

Int. Cl.[6] F16B *15/08*

U.S. Cl. 411—442 **6 Claims**



1. A nail having a shank and comprising;

at least two shallow recesses in one side of said shank, said recesses being formed by chipping tool means, so as to provide recesses of a precise predetermined depth on the same side of the shank of each said nail, said recesses being adapted and located to receive strip wire material, welded in said recesses, and wherein there are at least two said wire strips, said wire strips being welded in respective said recesses whereby to form parallel welded wire strips welded to said recesses in said nail shanks.

5,909,994

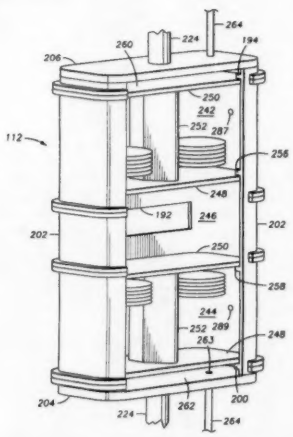
VERTICAL DUAL LOADLOCK CHAMBER

Rick Blum, Alameda; Kevin Fairbairn, Saratoga, and Christopher Lane, San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Nov. 18, 1996, Appl. No. 749,611

Int. Cl.[6] B65G *1/10*

U.S. Cl. 414—217 **19 Claims**



1. An apparatus for loading wafers into a processing system, comprising:

(a) a chamber disposed adjacent to the processing system, the chamber comprising:

(i) an enclosure;

(ii) a transfer region which communicates between the enclosure and the processing system through an aperture formed in a sidewall of the chamber;

(iii) a first and second loading/unloading port formed in the sidewall of the chamber; and

(iv) one or more exhaust ports;

(b) a first and a second isolatable compartment movably disposed in the chamber, each compartment positionable in communication with the aperture while the other compartment is in communication with one of the loading/unloading ports, each compartment comprising:

(i) a top platform;

(ii) a bottom platform substantially parallel to the top platform; and

(iii) a support member interposed between the top platform and the bottom platform;

(c) one or more actuators coupled to the first and second compartments to provide movement of the first and second compartments through the chamber; and

(d) one or more exhaust pumps connected to the one or more exhaust ports for adjusting a pressure condition in the first and second isolatable compartments.

5,909,995

TRANSPORT DEVICE FOR WORKPIECES IN A VACUUM SYSTEM

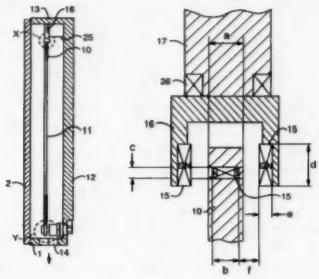
Hans Wolf, Erlensee; Reiner Hinterschuster, Hammersbach, and Guenter Kemmerer, Alzenau, all of Germany, assignors to Balzers Aktiengesellschaft, Furstentum, Liechtenstein

Filed Sep. 26, 1997, Appl. No. 939,027

Claims priority, application Switzerland, Oct. 15, 1996, 2516/96

Int. Cl.[6] **B65G** *49/07*

U.S. Cl. 414—217 **12 Claims**



1. A device for transporting a plate-shaped substrate in and through a vacuum treatment system having at least one treatment station with a parallelepiped substrate holder with an upper edge area and a lower edge area, the substrate being adapted to be held in a vertical plane in the substrate holder and the substrate holder being adapted to be held in a vertical plane in the treatment station, the device comprising:

drive means in the treatment station for engaging the lower edge area of the substrate holder for both supporting and driving the substrate holder along a horizontal transport path in the treatment station while permitting tilting of the substrate holder in a direction transversely to the horizontal transport path and about the drive means; and

magnetic means in the treatment station spaced vertically above the drive means and operatively engaged with the upper edge area of the substrate holder for centering the upper edge area of the substrate holder with respect to the magnetic means to resist tilting of the substrate holder for maintaining the substrate holder vertically while the substrate holder is moved along the horizontal transport path by the drive means.

5,909,996

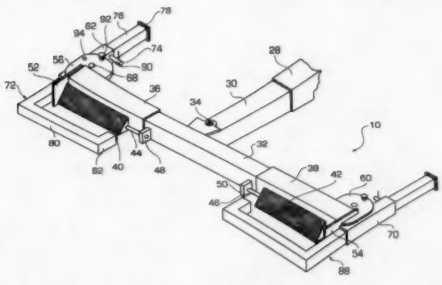
WHEEL LIFT HEAD

Lowell A Cowell, P.O. Box 2066, 134 Tower La., Morgantown, W. Va. 26502

Filed Jun. 4, 1997, Appl. No. 869,002

Int. Cl.[6] **B60P** *3/12*

U.S. Cl. 414—563 **2 Claims**



1. A wheel lift head assembly comprising support means adapted to be mounted adjacent a truck rear end for supporting a wheel lift head, a support arm adjustably supported on said support means, a crossbar pivotally mounted on said support arm, adjustment tubes slidably mounted on opposite ends of said crossbar, a guide tube pivotally mounted on an end of each adjustment tube outwardly of said crossbar, a J-shaped wheel engaging arm slidably supported in said guide tube, locking means for locking said guide tube in an operative position for engaging a vehicle wheel and for locking said guide tube in an inoperative position, first securing means for adjustably securing each adjustment tube on said crossbar, second securing means for adjustably securing said J-shaped arm in said guide tube and retaining means on said J-shaped arm to prevent withdrawal of said J-shaped arm from said guide tube,

wherein each guide tube is pivotally mounted between a pair of spaced apart, horizontally extending plates secured to the end of each adjustment tube, apertures extending through said plates adjacent opposite sides of each guide tube in the operative and inoperative positions, respectively, and pin means selectively insertable in said holes for selectively locking said guide tube in said operative position and said inoperative position.

5,909,997

DEVICE FOR TRANSFERRING A WORK PIECE FROM A FIRST MACHINE TO A SECOND MACHINE

John-Erik Liljengren, and Josef Zitek, both of Olofström, Sweden, assignors to AB Volvo, Gothenburg, Sweden

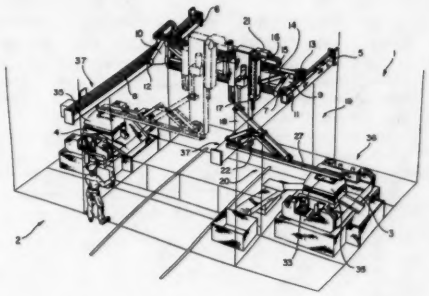
Continuation of application No. 08/630,620, Apr. 10, 1996, abandoned, which is a continuation of application No. 08/075,507, Oct. 4, 1993, Pat. No. 5,520,502. This application Oct. 28, 1997, Appl. No. 959,645.

Claims priority, application Sweden, Dec. 14, 1990, 9004006

This patent is subject to a terminal disclaimer

Int. Cl.[6] **B65G** *65/00*

U.S. Cl. 414—751 **5 Claims**



1. An apparatus for transferring a work piece along a work path from a first to a second station, the work path having at least a substantially horizontal longitudinal direction, comprising:

a carrier device;

a linkage system mounted on the carrier device and having a free end for load carrying;

means for driving the linkage system so that the free end is movable relative to the carrier device along the longitudinal work path;

an elongated boom fixed to the free end of the linkage system for movement with the free end of the linkage system, the elongated boom having a longitudinal direction parallel to the longitudinal work path;

a work piece holder device mounted on the boom for movement substantially from one end of the boom to an opposite end of the boom along the longitudinal direction of the boom; and

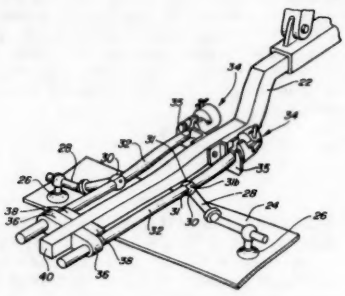
drive means connected between the carrier device and the boom for moving the holder device along the boom.

5,909,998

TOOL MOUNT FOR MOVING ELEMENTS

Alfred F. Herbermann, 1421 Arlington Blvd., Ann Arbor, Mich. 48198; Jacob J. Van't Land, 4874 Cole Blvd., Ypsilanti, Mich. 48197, and Michael A. Filipiak, 1435 Natalie Land, Apt. #111, Ann Arbor, Mich. 48105

Continuation of application No. 08/546,940, Oct. 23, 1995, Pat. No. 5,746,567, which is a continuation-in-part of application No. 08/353,920, Dec. 12, 1994, Pat. No. 5,733,097. This application Mar. 17, 1998, Appl. No. 46,504.
This patent is subject to a terminal disclaimer
Int. Cl.[6] B25J 10/06
U.S. Cl. 414—752 4 Claims



1. A tool mounting system comprising:

a moving member for manipulation of tools attached to said moving member;

at least one elongate tool mount extending between two axial ends, said elongate tool mount being fixed to said moving member and being removable therefrom;

a quick-release mount structure including a handle, said handle being actuatable to release said tool mount from said moving member, said handle being fixed to said moving member, structure connecting and locking said elongated tool mount to said moving member when said handle is in a locked position, and said elongate tool mount being removable from said moving member when said handle has been moved to a removal position for facilitating unlocking and removal of said tool mount to said moving member;

tools mounted on said tool mount at any of an infinite number of locations; and

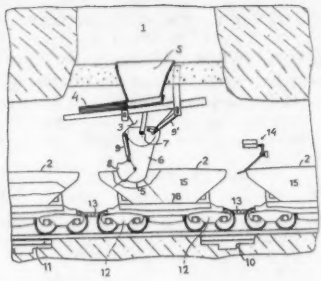
said elongate tool mount being fixed to said moving member adjacent each axial end, said moving member extending generally in a parallel axis adjacent said elongate tool mount.

5,909,999

METHOD TO MAXIMALLY UTILIZE THE LOADING CAPACITY OF AN INDIVIDUAL WAGON AND THE TRAIN WHEN LOADING WITH BULK MATERIAL

Hilding Manstrom, Lulea, Sweden, assignor to Luossavaara-Kiirunavaara AB (LKAB), Lulea, Sweden

PCT No. PCT/SE96/00006, § 371 Date Nov. 17, 1997, § 102(e) Date Nov. 17, 1997, PCT Pub. No. WO96/26142, PCT Pub. Date Aug. 29, 1996
PCT Filed Jan. 9, 1996, Appl. No. 913,351
Claims priority, application Sweden, Feb. 24, 1995, 9500692
Int. Cl.[6] B65G 67/22
U.S. Cl. 414—809 7 Claims



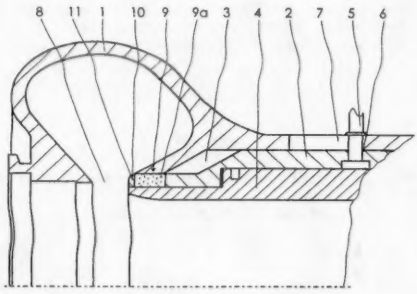
1. A method of utilizing to a maximum the load-carrying capacity of a wagon or a train of wagons when filling said wagon with pourable bulk material, from a silo having a raisable and lowerable delivery chute which includes an outlet opening and which functions to discharge said material into said wagon moving beneath the chute, wherein said moving wagon to be loaded is weighed and its empty weight registered, which comprises registering the type of said moving wagon to be filled, and feeding registered data representative of said empty weight of the wagon and the height of the wagon concerned to a computer which on the basis of this data and the density of the bulk material causes the outlet opening of the chute to be positioned at a fixed height above the wagon bottom which is in accord with the type of wagon concerned, through the medium of manoeuvering devices, said fixed height determining the volume of bulk material that corresponds to the maximum permitted total weight for this individual wagon and supplying said pourable material from said chute in accordance with said data to load said wagon.

5,910,000

EXHAUST GAS TURBOCHARGER TURBINE FOR AN INTERNAL COMBUSTION ENGINE

Marco Schade, Nordhausen; Erwin Schmidt, Baltmannsweiler, and Siegfried Sumser, Stuttgart, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

Filed Nov. 3, 1997, Appl. No. 962,900
Claims priority, application German Dem. Rep., Nov. 4, 1996, 196 45 388
Int. Cl.[6] F01D 1/08
U.S. Cl. 415—158 5 Claims



1. In an exhaust gas turbocharger turbine for an internal combustion engine including a turbine housing with an annular flow path, a control sleeve with a front end axially movably supported in an annular space formed in said housing adjacent said annular flow path, and means for axially moving said control sleeve out of and into said annular flow path for controlling exhaust gas flow through said annular flow path onto a turbine wheel, said control sleeve having, in the area which is movable into said annular flow path, a flow guide structure with vanes for guiding the exhaust gas flow through said annular flow path, the improvement comprising: a ring disposed at the front end of said control sleeve in front of said flow guide structure, said ring covering and sealing said annular space when said control sleeve is fully retracted into said annular space and said annular flow path is fully open.

5,910,001

METHOD FOR ADJUSTING ENGAGED CLEARANCE BETWEEN ROTORS OF SCREW COMPRESSOR AND APPARATUS THEREFOR

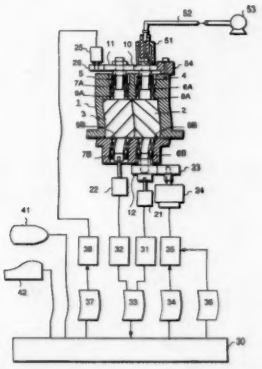
Kenichi Takahashi, Ryugasaki; Hiroyuki Matsuno, Haramachi; Hiroyasu Obata, Zama, and Megumi Kawai, Ebina, all of Japan, assignors to Hitachi Techno Engineering Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1997, Appl. No. 879,609

Claims priority, application Japan, Jul. 3, 1996, 8-173391; Dec. 20, 1996, 8-341615

Int. Cl.[6] **F04C** *18/16*

U.S. Cl. 418—1 ***12 Claims***



1. A method of adjusting an engaged clearance between rotors of a screw compressor having a male rotor and a female rotor inside a casing, both of the rotors being rotated while maintaining a required very small clearance therebetween using timing gears fixed individually to the rotors through shrink fitting, the method *comprising the steps of:*

loosening the shrink fitting between one of said timing gears and the rotor on which the one of said timing gears is mounted, while movement of the other of said timing gears is being restricted; and

intermittently applying torques to said rotor on which the one of said timing gears is mounted using a servo motor to set the very small clearance between the rotors to a required value.

5,910,002

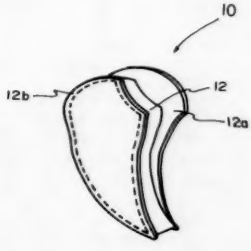
GUN TRIGGER SAFETY DEVICE

James F. Hunter, 1225 Green Tree, Rocky Mount, N.C. 27804

Provisional application No. 60/008,067, Oct. 30, 1995. This application Sep. 6, 1996, Appl. No. 709,360.

Int. Cl.[6] **F41A** *17/54*

U.S. Cl. 42—70.07 ***9 Claims***



1. A gun trigger safety device for use in combination with a gun having a trigger and a trigger guard, said guard having an inner perimeter disposed about said trigger, said device comprising:

trigger disabling means including a resilient plug formed to closely fit a space defined by a rear edge of said trigger and that portion of said inner perimeter of said trigger guard located behind said trigger, said plug having generally parallel side surfaces and being of approximately the same thickness as said trigger guard; and

unidirectional release means including a pair of flexible asymmetrical flanges integrally formed with said plug and projecting outwardly from said side surfaces thereof in generally parallel spaced-apart relation about a periphery of said plug, said flanges conforming to the shape of said trigger guard and said trigger and partially overlapping the lateral sides thereof *when said plug is installed behind said trigger, said flanges* functioning to secure said plug within said inner perimeter of said trigger guard and to prevent said gun from being fired, said flanges being configured to permit insertion and release of said device in only one direction whereby the likelihood of accidental release of said device is reduced.

5,910,003

LOCKING DEVICE FOR GUNS

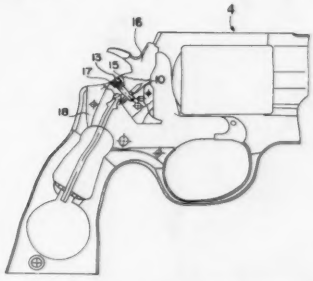
Cláudio Alexandre Kleinpaul, Porto Alegre, Brazil, assignor to Forjas Taurus S/A, Brazil

Filed Sep. 29, 1997, Appl. No. 939,542

Claims priority, application Brazil, Oct. 25, 1996, 9604462; Jul. 18, 1997, 002489

Int. Cl.[6] **F41A** *17/00*

U.S. Cl. 42—70.11 ***5 Claims***



1. Locking device for guns, comprising: a revolver having a rear *portion with an external surface thereof and a hammer therein* operative to move to the hammer cocking position and a revolver frame having a striking edge for said hammer; a locking pin housed in a housing cavity made in said rear portion of the revolver; an operable head portion of said locking pin apparent on the external surface and an opposite end portion of said locking pin and a substantially helicoidal groove of said locking pin cooperating with a retention pin; wherein the device locking the revolver when, upon operation with a suitable key, the said locking pin *translates inside said housing cavity projecting said head portion* outwards of the said housing cavity in order to cooperate with said striking edge so that said projecting head portion obstructs hammer cocking movement.

5,910,004

VIBRATION ENHANCER FOR FISHING ROD

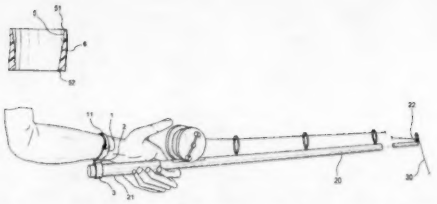
Mark A. Antosh, 4822 Blue Ridge Trail, Mountaintop, Pa. 18707

Filed Sep. 18, 1997, Appl. No. 933,265

Int. Cl.[6] **A01K** *97/10;87/00*

U.S. Cl. 43—21.2 **3 Claims**

1. A device for improving the sensing of vibration of a fishing rod by the user comprising an arm member of semi circular configuration which transverses a forearm of the user; a strap portion attached to the arm member to attach the arm member to



the forearm of the user; a stem, protruding from the arm member; a pliable receptacle comprising a tubular body attached to the stem, said tubular body having the side of a split defined in the body to allow the receptacle to increase in diameter in response to a fishing rod handle being inserted therein, an inner surface having an interior diameter which gradually decrease in size from one end to an opposite end of the tubular body and a series of ribs defined in said inner surface of said body, whereby a fishing rod handle is inserted into the receptacle and vibrations of the rod caused by interaction of a fishing line are translated to the forearm of the user.

5,910,005

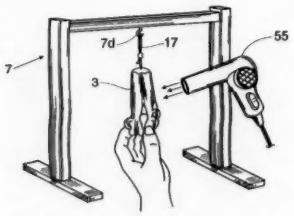
CANDLEFORMING METHOD

Mark J. Scherr, 14720 W. Honey La., New Berlin, Wis. 53151

Provisional application No. 60/014,663, Apr. 4, 1996. This application Mar. 10, 1997, Appl. No. 814,200.

Int. Cl.[6] C11C *5/00*

U.S. Cl. 431—126 **16 Claims**



1. A method for forming decorative candles, comprising the steps of:

providing a candleforming kit that includes a candle core having a composition such that an outer surface of said candle core melts at a temperature below about 150° Fahrenheit;

heating a working area on an outer surface of said candle core such that said working area is pliable;

sculpturing a portion of said working area;

reheating said portion of said working area with a readily available household heating implement whenever the temperature of said portion of said working area falls below a predetermined temperature; and

continuing to sculpture said portion of said working area after said reheating step.

5,910,006

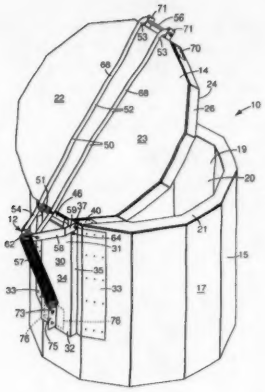
KILN LID MOUNTING ASSEMBLY

Michael D. Conroy, 4696 Trading Post Tr. S., Afton, Minn. 55001; Jay A. Johnson, 2269 Lake Elmo Ave. North, Lake Elmo, Minn. 55042; Claude E. Cybulski, and Eric R. Cybulski, both of Lake Elmo, Minn., assignors to Michael D. Conroy, Afton, and Jay A. Johnson, Lake Elmo, both of Minn.

Filed Jun. 1, 1997, Appl. No. 864,882

Int. Cl.[6] F27D *1/18*

U.S. Cl. 432—250 **20 Claims**



1. An assembly adapted for mounting a lid of a kiln on a body of the kiln, said body having a normally vertically extending and a normally horizontal upper surface and comprising a ceramic lining defining said upper surface and a chamber recessed from and opening through said upper surface, said chamber being adapted to receive ceramic objects, and said lid being adapted to rest on said upper surface and to extend across the opening to said recess in a closed position of said lid, said lid comprising a layer of ceramic material having a peripheral surface and major upper and lower surfaces defining the upper and lower surfaces of the lid, and comprising a binding member tensioned around said peripheral surface retaining the ceramic material in the layer and defining a periphery of the lid; the kiln including means for heating the chamber with the lower surface of the lid supported on the upper surface of the body to cure ceramic objects within the chamber, with such heating causing expansion of the ceramic lining including in the vertical direction;

said assembly comprising an anchor member having opposite upper and lower ends and opposite sides extending between said ends, said anchor member being adapted to be mounted on the side surface of the body of the kiln with said upper end adjacent the upper surface of the body and said sides spaced along and extending generally vertically along the outer side surface of the body;

a pivot pin having an axis and being mounted on the anchor member adjacent said upper end with said axis generally horizontal;

spaced hinge portions adapted to be attached to the periphery of said lid and having surfaces defining openings through said spaced hinge portions receiving and being pivotable about said pivot pin, said surfaces defining openings through said spaced hinge portions comprising, with said lid supported on said upper surface of the body, opposed generally vertically extending surfaces having sufficient length to afford vertical movement of said hinge portions and lid relative to said pivot pin to accommodate expansion of the ceramic lining during heating of the kiln by the heating means;

a force transfer structure including

a pivot portion having a lower end part pivotably mounted on said pivot pin, said pivot portion being adapted to project from said pivot pin along the periphery of the lid and having an upper part adapted to be spaced above the upper surface of the lid, and

a transverse portion attached to the upper part of said pivot portion, said transverse portion having a lid bridging part projecting from said upper part, adapted to be spaced above the upper surface of the lid, and having a distal end adapted to be positioned along the periphery of the lid at a location opposite said pivot portion, said transverse portion also having a force receiving part projecting from the side of said upper part opposite said lid bridging part and having a distal end spaced from said pivot portion;

mounting means adapted for mounting the distal end of said lid bridging part on the periphery of said lid at said location opposite said rear portion, which mounting means affords

pivoting of said force transfer structure relative to said lid *around an axis parallel to the axis of said pivot pin; and*

biasing means adapted for applying a force at said distal end of said force receiving part to assist manual lifting of said lid at said distal end portion of said lid bridging part or to lift said lid, such lifting pivoting said force transfer structure and said lid about said pivot pin to move said lid from said closed position to an open position spaced from said upper surface of the body.

5,910,007

BUCCAL TUBE

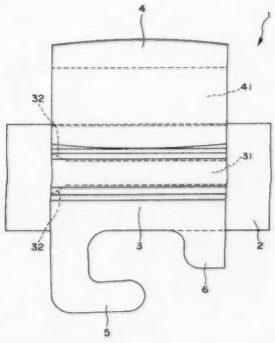
Kenichi Shimodaira; Junichi Hayashi, and Michio Ito, all of Nagano-ken, Japan, assignors to Injex Corporation, and Matsumoto Dental College, both of Nagano-ken, Japan

Filed Jul. 24, 1997, Appl. No. 899,548

Claims priority, application Japan, Jul. 25, 1996, 8-196785

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—17 **20 Claims**



1. A buccal tube, comprising:

a base part; and

at least one tube,

wherein they are formed from a metal material comprising Ti or Ti alloy, and 0.14 to 1.1 wt % C, O and N.

5,910,008

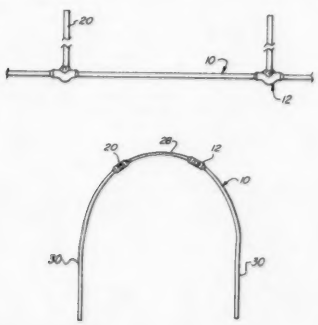
ARCHWIRE WITH POSTS

Khoa Q. Tran, Bristol, Conn., assignor to Acme-Monaco Corporation, Plainville, Conn.

Filed Feb. 26, 1998, Appl. No. 31,171

Int. Cl.[6] A61C *7/00*

U.S. Cl. 433—22 **19 Claims**



1. A dental archwire comprising:

(a) an elongated wire of nickel/titanium alloy and having a *generally arcuate configuration;*

(b) a pair of tubular metallic sleeves in spaced apart relationship at predetermined points along the length of said wire, said sleeves being crimped onto said wire and providing a crimped cross section intermediate the length thereof; and

(c) an upstanding metallic post on each of said sleeves, said posts being bonded to said sleeves at said crimped cross section.

5,910,009

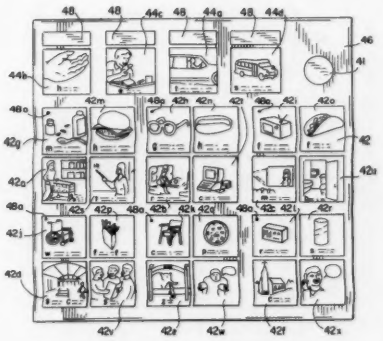
COMMUNICATION AID USING MULTIPLE MEMBRANE SWITCHES

Ruth B. Leff, and Aaron N. Leff, both of 6589 N. Crestwood Dr., Milwaukee, Wis. 53209

Filed Aug. 25, 1997, Appl. No. 918,066

Int. Cl.[6] G09B *5/00*

U.S. Cl. 434—322 **20 Claims**



1. A communication aid for a handicapped patient comprising:

a case having a flat support surface;

a touch pad securely mounted to the case above the support surface, the touch pad having a switch membrane, the switch membrane being divided into a plurality of mode selection switches and a plurality of activation switches;

at least one mode symbol arranged to correspond to one of the mode selection switches, the mode symbol illustrating a category of need;

a plurality of message symbols each representing a need of a person, said message symbols being arranged to correspond in location to the activation switches on the touch pad;

a record button contained on the touch pad, the record button being depressible to record a sound message that corresponds to one of the message symbols;

a memory device for storing a plurality of the sound messages, each sound message recorded to correspond to one of the message symbols and having an address defined by a combination of one of the mode selection switches and the activation switch corresponding in location to the message symbol such that a sound message is stored in the memory device for each combination of the mode selection switches and the activation switches;

a sound generating device for generating the sound message associated with the combination of one of the mode selection switches and one of the activation switches when the mode symbol and the message symbol on the touch pad are depressed.

5,910,010

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE, AND PROCESS AND APPARATUS FOR MANUFACTURING THE SAME

Hirotaka Nishizawa, Kokubunji; Tomoyoshi Miura, Kodaira; Ichirou Anjou, Koganei; Masamichi Ishihara, Hamura; Masahiro Yamamura, Higashimurayama; Sadao Morita, Ome; Takashi Araki; Kiyoshi Inoue, both of Tokyo; Toshio Sugano, Kodaira; Tetsuji Kohara, Tokyo; Toshio Yamada, Hamura; Yasushi Sekine, Ome; Yoshiaki Anata, Hidaka; Masakatsu Goto, Atsugi; Norihiko Kasai, Sagamihara; Shinobu Takeura, Yamato; Mutsuo Tsukuda, Zama; Yasunori Yamaguchi, Fussa; Jiro Sawada, Kokubunji; Hidetoshi Iwai, Ome; Seiichiro Tsukui, Sayama; Tadao Kaji, Tokyo, and Noboru Shiozawa, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi ULSI Engineering Corp., Kodaira; Hitachi Tohbu Semiconductor, Ltd., Moroyama-machi, and Hitachi Hokkai Semiconductor, Ltd., Kameda-gun, all of Japan

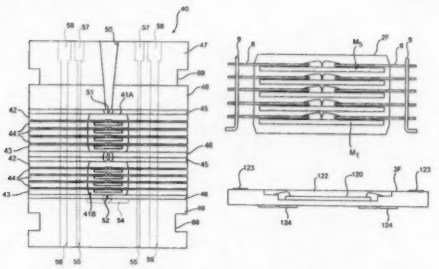
PCT No. PCT/JP95/00662, § 371 Date Feb. 18, 1997, § 102(e) Date Feb. 18, 1997, PCT Pub. No. WO95/29506, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 5, 1995, Appl. No. 732,215

Claims priority, application Japan, Apr. 26, 1994, 6-88973; Aug. 20, 1994, 6-217814

Int. Cl.[6] H01L *21/52;21/56;21/58;21/60*

U.S. Cl. 438—15 **11 Claims**



1. A method for manufacturing a semiconductor integrated circuit device, comprising the steps of:

constructing a plurality of lead frames, each of said frames having leads which each include an inner portion and an outer portion;

electrically connecting a semiconductor chip to said inner portion of said leads of each frame;

stacking said lead frames one above each other to form a vertical stack;

inserting a plate between each of said lead frames, each said plate having an opening in the center thereof whereby a central cavity is formed in said stack;

placing said stack between a top mold member and a bottom mold member;

injecting a resin into said central cavity;

curing said resin to form a single resin package encapsulating said semiconductor chips of said lead frames; and

releasing said resin package from said mold members.

5,910,011

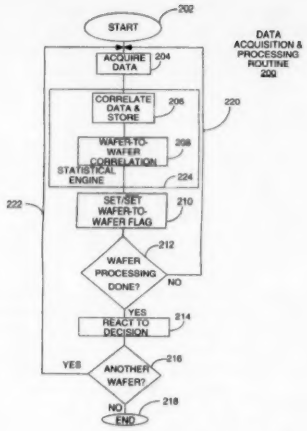
METHOD AND APPARATUS FOR MONITORING PROCESSES USING MULTIPLE PARAMETERS OF A SEMICONDUCTOR WAFER PROCESSING SYSTEM

James P. Cruse, Santa Cruz, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed May 12, 1997, Appl. No. 854,508

Int. Cl.[6] G01R *31/26;* **H01L** *21/66*

U.S. Cl. 438—16 **10 Claims**



1. A method for monitoring semiconductor wafer processing system parameters during operation of the system comprising the steps of:

acquiring parametric data indicative of system characteristics by a plurality of sensors connected to the system;

correlating said data from said plurality of sources of parametric data to form a correlation signal;

defining a trigger criterion corresponding to a particular value of said correlation signal resulting from a simultaneous chance in two or more of said wafer processing system parameters to form a trigger point;

comparing said correlation signal to said trigger point to determine the existence of a specific characteristic within the system; and

reacting to said comparison.

5,910,012

WAVEGUIDE TYPE SEMICONDUCTOR PHOTODETECTING DEVICE METHOD FOR FABRICATING

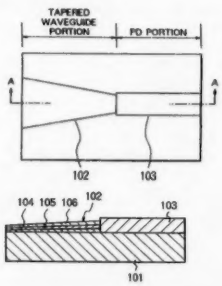
Takeshi Takeuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of application No. 08/757,999, Nov. 27, 1996, Pat. No. 5,701,379. This application Aug. 1, 1997, Appl. No. 904,358.

Claims priority, application Japan, Nov. 30, 1995, 7-334298

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—31 **5 Claims**



1. A fabrication process of a waveguide type semiconductor photodetecting device having a photodiode portion, a light incident portion, and a waveguide optically coupling the photodiode portion and the light incident portion, the fabrication process comprising the steps of:

forming a pair of dielectric masks on a compound semiconductor substrate, said pair of dielectric masks forming a narrow gap therebetween from the light incident portion to the photodiode portion;

sequentially growing semiconductor layers comprising a lower clad layer, a core layer and an upper clad layer on said compound substrate by metal organic chemical vapor deposition using said dielectric masks as a growth mask; and

removing said dielectric masks and burying said semiconductor layers with a semiconductor layer.

5,910,013

PROCESS FOR MANUFACTURING A SOLID-STATE PICK-UP DEVICE

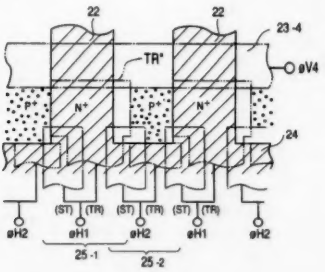
Kazuhide Fujikawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 2, 1996, Appl. No. 691,250

Claims priority, application Japan, Aug. 4, 1995, 7-199491

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—57 **6 Claims**



1. A process for manufacturing a charge transfer section, used in a solid-state image pick-up device, for transferring charges from a vertical transfer register to a horizontal transfer register, said process comprising the steps of:

ion-implanting first conductive-type impurities to provisionally form channel regions of a transfer register in such a manner that they are spread in an area having a width equal to or larger than a transfer register of a horizontal transfer register;

providing an insulating layer over said device;

forming electrodes of said vertical transfer register and said horizontal transfer register over said insulating layer;

forming a resist pattern on said electrodes, said resist pattern not extending beyond said electrodes; and

ion-implanting second conductive-type impurities into said substrate between said electrodes in a self-alignment manner using said electrodes and said resist thereon as a mask.

5,910,014

METHOD OF MAKING COMPOUND SEMICONDUCTOR PHOTODETECTOR

Takashi Iwasaki; Nobuhisa Tanaka; Yasuhiro Iguchi, and Naoyuki Yamabayashi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 23, 1996, Appl. No. 589,248

Claims priority, application Japan, Jan. 23, 1995, 7-027659

Int. Cl.[6] H01L *31/18*

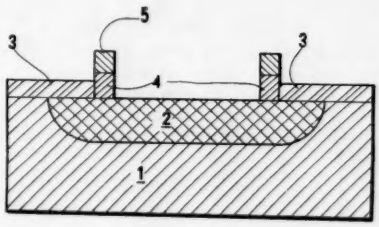
U.S. Cl. 438—94 **8 Claims**

1. A method of producing a compound semiconductor photodiode comprising the steps of;

depositing a protection film of SiO_x or Si_xN_y on an epitaxial wafer having an n-type InP substrate or a semi-insulating InP substrate and n-type compound semiconductor layers epitaxially grown on the n-type or semi-insulating InP substrate;

forming openings of the protection film on the epitaxial layers by eliminating parts of the protection film;

selectively growing non-doped InGaAs undercoats on the epitaxial layers in the openings of the protection film without



accumulating the non-doped InGaAs undercoats on the protection mask by using the protection film as a mask;

growing a solid p-impurity diffusion source of a compound semiconductor including phosphor and a p-impurity on the InGaAs undercoats without accumulating on the protection film by using the protection film as a mask;

diffusing the p-impurity from the solid diffusion source through the InGaAs undercoats into the epitaxial layers during or after the growth of the diffusion source;

making p-regions in the epitaxial layers by the diffusion of the p-impurity;

then producing p-electrodes on the InGaAs undercoats and the protection film and;

then etching parts of undercoats which are not covered with the p-electrodes by using the p-electrodes as a mask.

5,910,015

THIN FILM TRANSISTOR AND MANUFACTURING METHOD OF THE THIN FILM TRANSISTOR

Toshiyuki Sameshima; Masaki Hara; Naoki Sano; Dharam Pal Gosain, and Setsuo Usui, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

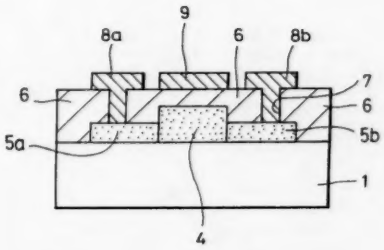
Continuation of application No. 08/571,728, Dec. 13, 1995, Pat. No. 5,889,292, and application No. 08/331,273, Oct. 28, 1994, Pat. No. 5,726,487, and a division of application No. 08/036,285, Mar. 24, 1993, abandoned. This application Feb. 18, 1998, Appl. No. 25,616.

Claims priority, application Japan, Mar. 30, 1992, P04074577

This patent is subject to a terminal disclaimer

Int. Cl.[6] H01L *21/84*

U.S. Cl. 438—163 **15 Claims**



1. A method of manufacturing a thin film transistor comprising the steps of:

depositing a doped amorphous Si layer onto a substrate;

removing a portion of the doped amorphous Si layer to provide an exposed area for accommodating a channel region;

depositing an amorphous SiGe thin film on the exposed portion of the substrate to form said channel region;

irradiating said channel region with energy beams to crystallize said SiGe thin film.

5,910,016

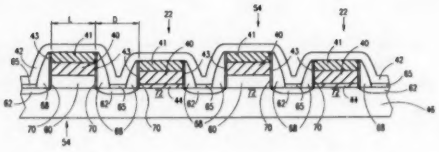
SCALABLE EPROM ARRAY

Reza Kazerounian, Alameda; Rustom F. Irani, Santa Clara, both of Calif., and Boaz Eitan, Ra'anana, Israel, assignors to Waferscale Integration, Inc., Fremont, Calif.

Division of application No. 08/212,165, Mar. 11, 1994, Pat. No. 5,623,443. This application Feb. 25, 1997, Appl. No. 806,559.

Int. Cl.[6] H01L *21/336*

U.S. Cl. 438—258 **4 Claims**



1. For an alternating metal virtual ground EPROM array having EPROM areas and control areas, each control area comprising select transistors and isolation units located between neighboring ones of the select transistors, the method of manufacturing the isolation units comprising the steps of:

creating areas of thick oxide and areas of thin oxide in said control areas;

with a mask, laying down strips of first polysilicon over at least a part of each of said thick and thin oxide portions; and

etching said thick and thin oxide portions in accordance with said mask, thereby to align said thick and thin oxide portions with said strips of first polysilicon.

5,910,017

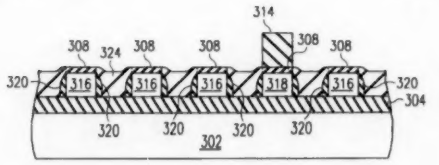
INCREASING UNIFORMITY IN A REFILL LAYER THICKNESS FOR A SEMICONDUCTOR DEVICE

Yin Hu, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 21, 1997, Appl. No. 804,452

Int. Cl.[6] H01L *21/76*

U.S. Cl. 438—404 **8 Claims**



1. A method for isolating an active area of a MOS semiconductor device on a silicon-on-insulator substrate having a first silicon region, a first insulator layer over said first silicon region, and a second silicon region over said first insulator layer comprising:

forming a second isolation layer with an upper surface over said second silicon region;

etching said second isolation layer, and said second silicon region, to form at least one mesa of active area and at least one mesa of dummy active area;

depositing a refill layer with an upper surface over said first isolation layer and said second isolation layer; and

etching back said refill layer until said upper surface of said second isolation layer is exposed.

5,910,018

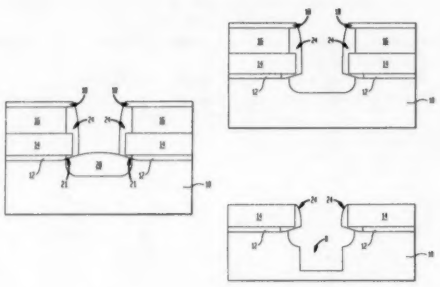
TRENCH EDGE ROUNDING METHOD AND STRUCTURE FOR TRENCH ISOLATION

Wen-Yueh Jang, Hsinchu, Taiwan, assignor to Winbond Electronics Corporation, Taiwan

Filed Feb. 24, 1997, Appl. No. 803,844

Int. Cl.[6] H01L *21/76*

U.S. Cl. 438—425 **6 Claims**



1. A method for forming a semiconductor structure with a shallow trench comprising the steps of:

forming a first oxide layer, a first nitride layer, a second oxide layer and a second nitride layer sequentially on a silicon substrate of said semiconductor structure,

forming a mask with a photo-resist layer on said second nitride layer,

etching said second nitride layer, said second oxide layer and said first nitride layer through said mask to expose an isolation edge on either side of the etched area,

removing said photo-resist layer,

etching said first oxide layer to form recesses,

growing a thin third oxide layer on said silicon substrate,

depositing a thin nitride layer along said isolation edges including said recesses, such that said thin nitride layer filling at least said recesses,

etching said thin nitride layer to form a nitride spacer along said isolation edges,

growing a thick oxide layer in said substrate to form curved portions and removing said thick oxide layer,

repeating said step of growing and removing said thick oxide layer as necessary to obtain a desired trench slope,

etching a trench into said silicon substrate to a predetermined depth using said second oxide layer and said first nitride layer as a mask, said second nitride layer being etched away, said trench having a vertical profile,

etching said second oxide layer, and

applying thermal oxidation to said semiconductor structure.

5,910,019

METHOD OF PRODUCING SILICON LAYER HAVING SURFACE CONTROLLED TO BE UNEVEN OR EVEN

Hirohito Watanabe, and Ichiro Honma, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of application No. 08/611,178, Mar. 5, 1996. This application Apr. 2, 1997, Appl. No. 829,358.

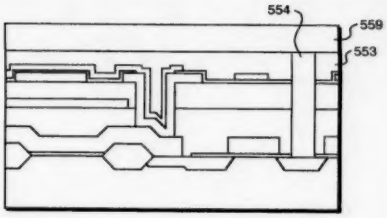
Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—488 **2 Claims**

1. A method of producing a silicon film comprising:

loading a substrate into a chamber;

introducing a material gas into said chamber at a first temperature to deposit a silicon layer on said substrate;



stopping introducing said material gas; and

following stopping introducing said material gas, introducing an oxygen gas into said chamber with reducing a temperature of said chamber from said first temperature to a second, lower temperature.

5,910,020

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE HAVING A REFRACTORY METAL PILLAR FOR ELECTRICAL CONNECTION

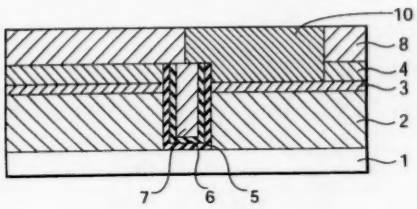
Yoshiaki Yamada, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 18, 1996, Appl. No. 769,162

Claims priority, application Japan, Dec. 18, 1995, 7-329303

Int. Cl.[6] H01L *21/28;21/311*

U.S. Cl. 438—624 **22 Claims**



1. A method for fabricating a semiconductor device, said method comprising the steps of:

forming a first insulation film on a first wiring layer formed on a semiconductor substrate;

forming a second insulation film on said first insulation film;

forming a third insulation film on said second insulation film;

forming a hole through said first, second and third insulation films to expose said first wiring layer at its bottom;

forming a refractory metal pillar structure by filling in said hole with a refractory metal;

forming a fourth insulation film to cover exposed surfaces of said pillar structure and said third insulation film;

selectively removing portions of said third and fourth insulation films to form an opening exposing a side and a top surface of said refractory metal pillar structure; and

filling in said opening with a conductive wiring material to form a second wiring layer to electrically connect with said refractory metal pillar.

5,910,021

MANUFACTURE OF SEMICONDUCTOR DEVICE WITH FINE PATTENS

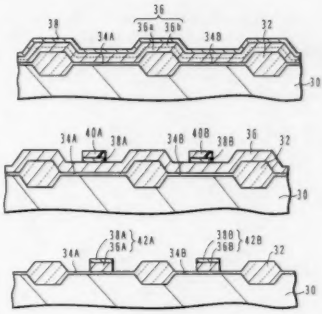
Suguru Tabara, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Continuation of application No. 08/498,537, Jul. 5, 1995, abandoned. This application Jul. 3, 1997, Appl. No. 898,417.

Claims priority, application Japan, Jul. 4, 1994, 6-174823; Aug. 15, 1994, 6-213161

Int. Cl.[6] H01L *21/28;21/461*

U.S. Cl. 438—636 **6 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

a) providing a substrate;

b) forming a conductive layer over of the substrate;

c) forming a conductive antireflection layer having a metal component on the conductive layer;

d) providing a resist mask for patterning the conductive antireflection layer;

e) selectively removing the conductive antireflection layer by a first etching gas to form a laminated mask of the resist mask and a conductive antireflection mask self-aligned with the resist mask, the first gas comprising a material selected from the group consisting of Cl_2, HCl, $SiCl_4$, Cl_2+BCl_3, and CCl_4, and combinations thereof; and

f) selectively removing the conductive layer through the laminated mask by a second etching gas which is different from the first etching gas, the second etching gas reacting with the metal component of the antireflection film to form a compound which suppresses etching of the antireflection film.

5,910,022

METHOD AND SYSTEM FOR TUNGSTEN CHEMICAL MECHANICAL POLISHING FOR UNPLANARIZED DIELECTRIC SURFACES

Milind Ganesh Weling, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed May 22, 1997, Appl. No. 861,941

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—692 **21 Claims**

1. In a chemical mechanical polishing (CMP) machine for polishing semiconductor wafers, a CMP process for removing a conductive layer from a dielectric surface while planarizing the dielectric surface, the method comprising the steps of:

a) placing a wafer onto a pad of a CMP machine, wherein said wafer includes an overlying conductive layer and an underlying dielectric layer;

b) dispensing a slurry onto said pad of said CMP machine;

c) polishing said wafer with said CMP machine such that said polishing has a substantially equal amount of conductive to dielectric selectivity; and

d) removing said wafer from said CMP machine when the surface of said dielectric layer is planarized and excess mate-

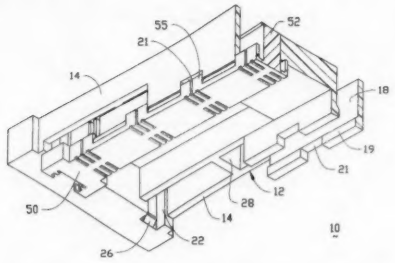
rial from said conductive layer is removed from said dielectric layer by said polishing.

5,910,023

HOLDING DEVICE FOR MOUNTING CONNECTOR ON BOARD

Robert G. McHugh, Evergreen, Colo.; Yu-Ming Ho, Pen-Chiao, and Ming-Chuan Wu, Taipei Hsien, both of Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Jul. 9, 1997, Appl. No. 890,581
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—41 **12 Claims**



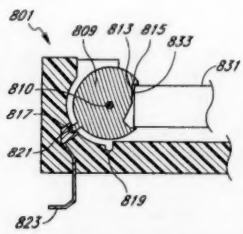
1. A holding device for use with a connector, comprising:
a plate-like body;
at least a retention member disposed on the body for retaining two sides of the connector;
a pair of end walls downward extending from two opposite end of the body;
a pair of guidance channels positioned in the end walls for cooperative engagement with end projections of the connector, wherein a boss is disposed in each of said channels for providing a lengthwise alignment function.

5,910,024

CARRIER SOCKET FOR RECEIVING A DAMAGED IC

Fred A. Goins, Boise, Id., assignor to MCMS, Inc., Nampa, Id.

Filed Aug. 28, 1997, Appl. No. 919,626
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—71 **21 Claims**



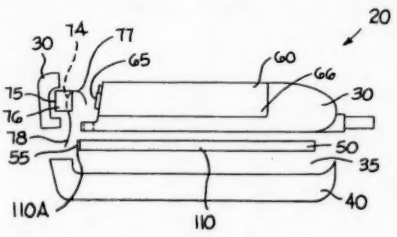
1. An apparatus for providing electrical contact between an electrical component having at least one electrical lead and a printed circuit board, the apparatus comprising:
a housing having a cavity for receiving the electrical component;
a first electrically conductive member configured e form of a disk, rotatably coupled to the housing and having a portion which extends into the cavity, the portion being configured to make electrical contact with the electrical lead of the electrical component; and
a second electrically conductive member, at least partially secured within the housing and having a portion which extends outwardly from the housing, for making an electrical connection with he printed circuit board, wherein the first conductive member engages the second conductive member so as to provide an electrical conduction path between the remaining portion of the electrical lead and the printed circuit board.

5,910,025

EDGE INTERFACE ELECTRICAL CONNECTORS

Gregory S. Mendolia, Forest, Va., assignor to Ericsson, Inc., Research Triangle Park, N.C.

Filed Oct. 31, 1997, Appl. No. 962,494
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—76.1 **22 Claims**



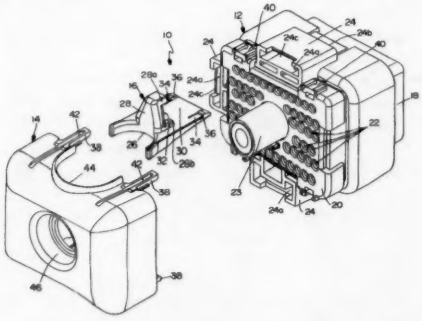
1. A radiotelephone, comprising:
a front housing member;
a rear housing member configured to overlay and matably connect with said front housing member to provide a channel therebetween, said rear housing member including a battery chamber therein;
a printed circuit board disposed in said channel intermediate of said front and rear housing members and having a pair of battery edge contact pads thereon; and
a plurality of elongated spring contacts positioned in said housing rear member such that said spring contacts electrically contact said printed circuit board battery edge contact pads.

5,910,026

ELECTRICAL CONNECTOR WITH CABLE STRAIN RELIEF

Lawrence E. Geib, Bartlett; Chandrasekaran Krishnaswamy, Lisle, and Gregory Paul Meyer, Elk Grove, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 4, 1997, Appl. No. 794,084
Int. Cl.[6] H01R *13/58*
U.S. Cl. 439—471 **15 Claims**



1. An electrical connector assembly for terminating the conductors of an electrical cable, comprising:

a dielectric housing having a front mating end and a rear termination end including a plurality of terminal-receiving passages extending between the ends for receiving a plurality of terminals terminated to the conductors of the electrical cable;

a discrete dielectric cover removably mounted on the housing at the termination end thereof substantially entirely covering the termination end of the terminal-receiving passages; and

a discrete dielectric strain relief member mounted on the housing at one of a plurality of mounting lotions near the termination end thereof and to which the electrical cable can be fixed;

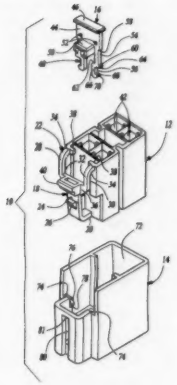
wherein the cover and the strain relief member combine to define an opening through which the cable can exit the connector from the housing and the cover is mounted to the housing independently of the strain relief member such that the cover can be removed from the housing without removing the strain relief member and the affixed cable.

5,910,027

CONNECTOR POSITION ASSURANCE

Roger W. Wayt, Dearborn, and Brent A. Kuhn, Novi, both of Mich., assignors to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed Oct. 8, 1997, Appl. No. 946,862
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—489 **17 Claims**



1. An electrical connection comprising:

a first electrical connector and a second electrical connector, said first electrical connector releasably matable with said second electrical connector;

a latching member having a first end, a second end, and an unlatching boss, said latching member spaced apart from and attached at said first and said second ends to said first electrical connector;

said first electrical connector and said second electrical connector moveable relative to each other between an unlatched and a latched position, said latching member releasably holding said first electrical connector and said second electrical connector at said latched position, and inward deflection of said unlatching boss permitting said first electrical connector and said second electrical connector to move to said unlatched position;

a locking member received between said latching member and said first electrical connector at an unlocked position; and

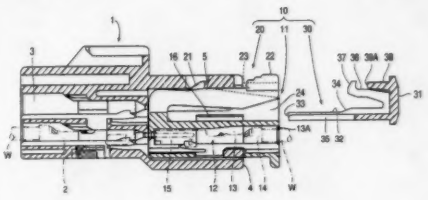
said locking member being moveable relative to said first electrical connector to a locked position thereby preventing *inward deflection of said unlatching boss and releasably* securing said first and said second electrical connectors to each other when said first and said second electrical connectors are at said latched position, and said locking member not being moveable when said first and said second electrical connectors are at said unlatched position.

5,910,028

CONNECTOR

Takeshi Tsuji, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Dec. 15, 1997, Appl. No. 990,426
Claims priority, application Japan, Dec. 13, 1996, 8-334131
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—489 **14 Claims**



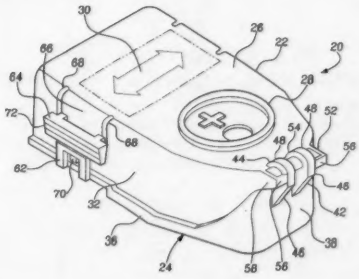
1. A connector having a housing, a bendable, cantilever locking arm on the housing having a free end, and a space between the locking arm and the housing having an open end at the free end of the locking arm, the locking arm being bent towards the housing to narrow said space during connection with a mating connector and resuming an unbent condition on full engagement of the connectors, and a spacer with an insertion member insertable through said open end and into said space said insertion member and said space having about the same height when the locking arm is unbent so that said spacer is insertable in said space only when said locking arm is in the unbent condition, wherein a distal end of said spacer insertion member constitutes primary detecting means for indicating a half-fitting of the connectors and is tapered away from said housing on the side opposite to said locking arm.

5,910,029

TWO-PIECE BATTERY TERMINAL SHIELD

Henry Anthony Siedlik, Novi; Zenon Hotra, Troy, and Michael Jerome Gniewek, Livonia, all of Mich., assignors to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed Feb. 10, 1997, Appl. No. 796,469
Int. Cl.[6] H01R *13/46*
U.S. Cl. 439—522 **23 Claims**



1. A battery terminal shield comprising:

a base including an orifice for receiving a battery terminal, said base including an integral first hinge member; and

a cover including an upper wall and a peripheral wall extending *downwardly from the periphery of said upper wall, said cover* including an integral second hinge member interlocked with said first hinge member to form a hinged connection between said base and said cover.

5,910,030

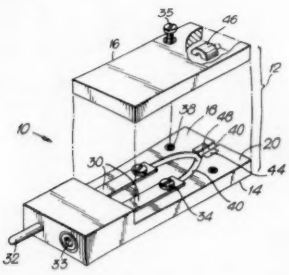
ANTENNA-EFFECT SUPPESSOR METHOD AND DEVICE PARTICULARLY FOR THERMOCOUPLES AND OTHER DISSIMILAR METAL CONDUCTOR COMBINATIONS

Milton Bernard Hollander; William Earl McKinley, both of Stamford, and Russell Stewart, Fairfield, all of Conn., assignors to Omega Engineering, Inc., Stamford, Conn.

Continuation-in-part of application No. 08/605,607, Feb. 22, 1996, abandoned. This application Sep. 24, 1996, Appl. No. 710,683.

Int. Cl.[6] H01R *13/66*

U.S. Cl. 439—620 ***9 Claims***



1. An electrical device for establishing a separable electrical connection with at least two external conductors of dissimilar metals, said device comprising:

a housing formed of electrically insulating material including a conductor guide groove;

an electrical contact element supported by said housing, said contact element having first means thereon capable of separately engaging at least a first external electrical conductor to define a portion of an electrical path of finite length extending through and away from said device,

said housing being totally transversely separable across a parting plane to form two housing halves, a ferrite element divided into components which nest in each of said housing halves and having a conductor passage extending therethrough, said ferrite element being positioned relative to said housing so that said conductor passage surrounds at least an axial portion of said electrical path extending through and away from said electrical device along said guide groove beyond said ferrite.

5,910,031

WIRE TO BOARD CONNECTOR

Kazuhiro Goto, Markham, Canada, assignor to The Whitaker Corporation, Wilmington, Del.

Provisional application No. 60/008,594, Dec. 13, 1995. This application Dec. 12, 1996, Appl. No. 766,197.

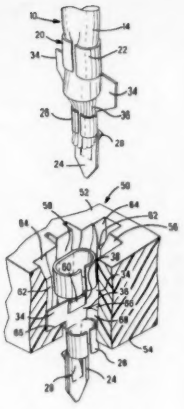
Int. Cl.[6] H01R *13/514*

U.S. Cl. 439—752.5 **15 Claims**

1. An electrical connector, comprising:

a housing having a front face and a mounting face opposite to the front face, a plurality of contact receiving cavities extend longitudinally through the housing from the front fact to the mounting face, the cavities have side walls and slots extending laterally from the side walls from the front face partially through the housing; and

a contact to be received in the cavity, the contact having a flat intermediate portion, the contacts having flat wings extending from sides of the intermediate portion thereof, the wings being in the same plane as the intermediate portion, the wings being received into the slots providing alignment and stability



of the contact and to prevent rotation of the contact in the cavity.

5,910,032

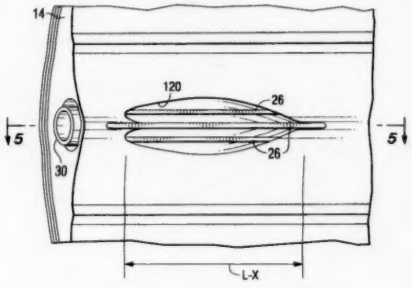
MARINE PROPULSION SYSTEM

David J. Gruenwald, Butte des Morts, and James D. Gruenwald, Hartford, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Oct. 14, 1997, Appl. No. 954,093

Int. Cl.[6] B63H *11/00*

U.S. Cl. 440—38 **20 Claims**



1. A marine propulsion system, comprising:

a pump having an inlet opening and an outlet opening;

an impeller disposed within said pump and attached to a drive shaft, said impeller having at least one blade attached thereto and being rotatable about a central axis of said drive shaft to cause water to flow through said pump from said inlet opening to said outlet opening and provide a propulsive force on said marine propulsion system, said impeller having an effective diameter, said outlet opening having a diameter with a magnitude at least 70% the magnitude of the effective diameter of said impeller and less than 98% of said effective diameter of said impeller, said inlet opening having an effective cross sectional area that diverges from a point at a leading edge of said inlet opening to a transition point between said leading edge of said inlet opening and said impeller, said inlet opening having an effective cross sectional area that converges from said transition point to said impeller;

a tubular rudder disposed proximate said outlet opening to provide a steering capability by directing said water in a selectable direction as it flows through said pump in response to rotation of said impeller; and

an engine having an output shaft which is rotatable in response to operation of said engine, said output shaft being connectable in torque transmitting relation with said drive shaft.

5,910,033

DEFLECTION MECHANISM FOR SHIP HULLS

Clas Norrstrand, Östhammar, Sweden, assignor to Marine Technology Development Ltd., Guernsey, United Kingdom

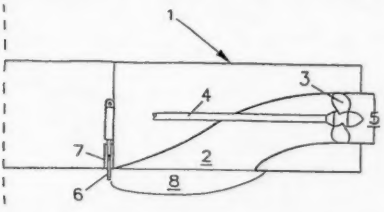
PCT No. PCT/SE96/00617, § 371 Date Nov. 7, 1997, § 102(e) Date Nov. 7, 1997, PCT Pub. No. WO96/35612, PCT Pub. Date Nov. 14, 1996

PCT Filed May 10, 1996, Appl. No. 945,854

Claims priority, application Sweden, May 12, 1995, 9501768

Int. Cl.[6] B63H *11/103*

U.S. Cl. 440—47 **12 Claims**



1. A device for a ship hull having multiple water jet driving units having separate inlet channels defined in the ship hull, the device being adapted to drain an inlet channel of a turned off water jet driving mechanism by creating a cavity defined in the relative water flow when the ship is in operational mode, the cavity being disposed outside an inlet opening defined at the inlet to cover the same, comprising:

a shiftable deflection member (**6**,**9**,**12**) attached to a bottom of the ship hull the deflection member (**6**,**9**,**12**) being substantially vertically shiftable relative to the ship hull, the deflection member (**6**,**9**,**12**) being immersible to a depth that depends upon cruising speed of the ship hull, the deflection member (**6**,**9**,**12**) having a shape that is adapted to a shape of the bottom of the ship hull, the deflection member (**6**,**9**,**12**) having a width that is at least as wide as a width of the inlet (**2**), the deflection member (**6**,**9**,**12**) being movable into an operational position so that an edge of the deflection member, immersed into the water flow, extends perpendicular to a direction of movement of the boat hull adjacent a forward edge of the inlet opening, and preferably disposed immediately in front of the inlet opening.

5,910,034

INTEGRAL OVERLAY WAKEBOARD BINDING AND SYSTEM

Gregg A. Vukelic, Seattle, Wash., and Eric S. George, Taunton, Mass., assignors to Earth & Ocean Sports, Inc., Hyannis, Mass.

Filed May 15, 1998, Appl. No. 80,069

Int. Cl.[6] B63B *35/86*

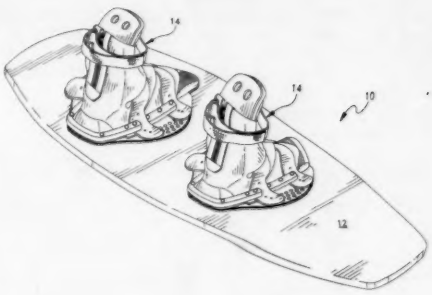
U.S. Cl. 441—70 **27 Claims**

1. A wake board binding adapted to be secured to a wake board which binding comprises:

a) a bottom support plate having a front end, a rear end, a left edge, a right edge, a top surface, and a bottom surface, and characterized by a left row of a plurality of apertures and a right row of a plurality of apertures;

b) a cushioned foot pad secured to the top surface of the support plate;

c) a heel receptacle having a back surface and lower edge with a plurality of apertures and extending about the back of the heel;



d) a toe receptacle having a top surface and left and right ends, each with a plurality of apertures and extending across the foot of a user;

e) the heel receptacle and the toe receptacle forming an enclosure on the top surface of the support plate and about the foot pad to receive a foot of the user;

f) a binding overlay comprising a single piece of sheet material having a top and a bottom and a base section to extend about the back surface of the heel receptacle, with an open bottom heel cup section to extend over and across the heel of the user, and a top left and a top right outwardly extending arm from the base section, and a spaced apart bottom left and a bottom right outwardly extending arm from the base section, each arm at the end thereof having a plurality of apertures therein to secure adjustably the arms; the top and bottom arms extending across and over the top surface of the toe and heel receptacle in a crisscross relationship; and

g) means to clamp respectively the ends of the extending arms and toe receptacle and heel receptacle through the respective apertures to the top surface of the bottom plate to provide selected support and tension to the overlay binding.

5,910,035

MEANS FOR RAISING ONE OR BOTH OF THE HEELS OF A SURFER

Thomas Rebotier, 8469 Paseo del Ocaso, La Jolla, Calif. 92037, and Kyle A Cohn, 4619 Juniper La., Palm Beach Gardens, Fla. 33418

Filed Jun. 23, 1997, Appl. No. 880,753

Int. Cl.[6] B63B *35/79*

U.S. Cl. 441—74 **4 Claims**

1. A foot pad substantially thicker on one side than on the other, and such that there exist a vertical section running from one lateral edge of said pad to the other, said section intersecting but not necessarily orthogonal to the longitudinal midline of said pad, said line of section being such that along the half of said section running from said midline to the edge of said pad on the thinner half of the pad, the thickness of said pad is substantially non-increasing from said midline to said edge.

5,910,036

ALIGNMENT MEASUREMENT APPARATUS AND METHOD FOR USING THE SAME IN FORMING PHOSPHOR SCREEN IN COLOR CATHODE-RAY TUBE

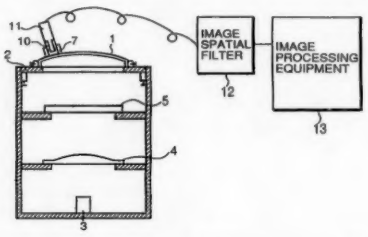
Takafumi Ninomiya, Shiga, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of application No. 08/623,027, Mar. 28, 1996, Pat. No. 5,762,528. This application Mar. 12, 1998, Appl. No. 41,018.

Claims priority, application Japan, Mar. 28, 1995, 7-69501

Int. Cl.[6] H01J *9/42*

U.S. Cl. 445—23 **1 Claim**



1. A method for using an alignment measurement apparatus which comprises an image sensor which photographs expo sure patterns on a panel surface; an image spatial filter which makes 3-color phosphor dots brighter and clearer; and

an image processing equipment which calculates and outputs a value of deviation between said exposure pattern of said 3-color phosphor dots and a reference exposure pattern, said method comprises the steps of:

measuring a value of deviation between said exposure pattern of said 3-color phosphor dots and a reference exposure pattern on said panel surface with respect to individual correcting lenses of exposure apparatus; and

evaluating said correcting lenses.

5,910,037

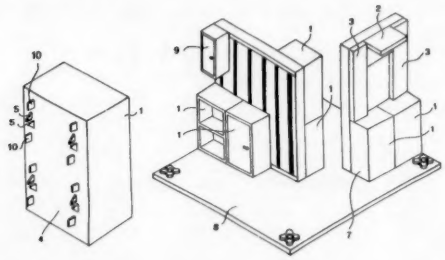
TOY BUILDING SYSTEM

Erik Bach; Kaj Svejstrup Mikkelsen, both of Billund; Carsten Peter Michaelsen, Vejle, and Philip Marshall Kushner, Greve, all of Denmark, assignors to INTERLEGO AG, Baar, Switzerland

Provisional application No. 60/006,973, Nov. **20, 1995**. This application Nov. **20, 1996**, Appl. No. **752,535**.

Int. Cl.[6] A63H 33/06; G09B 25/00

U.S. Cl. 446—108 **10 Claims**



1. A toy building system, comprising:

a number of fittings (**1**, **2**, **3**) with a top surface, a bottom surface and a number of lateral walls, including a front with functional parts, and a back (**4**);

wherein each fitting (**1**, **2**, **3**) has at least two functionally identical coupling means (**5**, **6**) being provided only on the back thereof, said at least two coupling means (**5**, **6**) including a protruding coupling means (**5**) that protrude a distance from the back (**4**) of the fitting (**1**, **2**, **3**), and wherein the at least two coupling means (**5**, **6**) are arranged at a mutual modular distance and provided in such a manner that the fittings (**1**, **2**, **3**) are adapted to be interconnected with the at least two functionally identical coupling means (**5**, **6**) on the back of another of said fittings in at least two different positions relative to each other.

5,910,038

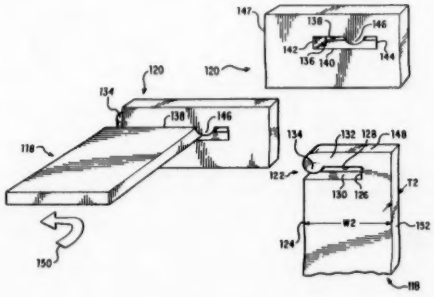
CONSTRUCTIONAL TOY PIECES

Yu Zheng, Covina, Calif., assignor to Patent Category Corp., Monrovia, Calif.

Division of application No. 08/665,084, Jun. 14, 1996, Pat. No. 5,762,530, which is a continuation-in-part of application No. 08/584,519, Jan. 11, 1996, Pat. No. 5,605,486. This application Jun. 8, 1998, Appl. No. 93,240.

Int. Cl.[6] A63H *33/08*

U.S. Cl. 446—114 **20 Claims**



1. An object assembled by interconnecting a plurality of puzzle pieces, the object comprising:

a first puzzle piece comprising a first joint having a substantially U-shaped mortise defined by a bottom edge, and first and second inner side edges extending from the bottom edge; and

a second puzzle piece comprising an aperture, the aperture comprising first and second long edges, first and second short edges connected by the first and second long edges, and a ridge positioned along the first long edge extending inwardly towards the aperture;

wherein the first puzzle piece further comprises an outer side edge opposite the first joint, and wherein the bottom edge of the first joint of the first puzzle piece is positioned adjacent the second short edge of the aperture of the second puzzle piece, and the outer side edge of the first puzzle piece is positioned adjacent the ridge, when the first joint of the first puzzle piece is connected to the aperture of the second puzzle piece.

5,910,039

ADJUSTABLE GAME CALL APPARATUS WITH MOISTURE DIVERTER AND PRECISION TUNING SYSTEM

Wilbur R. Primos, Jackson, Miss., and David A. Cardin, Eldorado, Ark., assignors to Primos, Inc., Jackson, Miss.

Filed Jun. 24, 1997, Appl. No. 881,247

Int. Cl.[6] A63H *5/00*

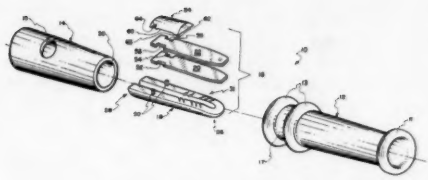
U.S. Cl. 446—207 **26 Claims**

1. An adjustable game call apparatus, comprising:

a main body portion;

an air passageway formed in the main body portion;

a reed secured within the air passageway, the reed having cut-out areas, the reed having vibrational characteristics such that



passage of a predetermined flow of air through the air passageway will cause the reed to vibrate and produce a sound;

a pair of stationary posts extending from the main body portion, the posts engaging the cut-out areas of the reed and allowing longitudinal adjustments of the reed relative to the air passageway to change the position of the reed relative to the main body portion.

7. A moisture diverter system for a game call apparatus, comprising:

a main body portion, the main body portion comprising a sounding board;

a centralized, main air passageway formed in the sounding board of the main body portion;

a sound-producing reed positioned on the sounding board;

a plurality of diverters coupled to the sounding board of the main body portion, the diverters terminating at the main air passageway to divert moisture away from the sounding board and transversely across the sounding board toward the centralized, main air passageway to prevent moisture from building up at locations where the reed is positioned on the sounding board.

5,910,040

METHOD OF CONTROLLING SHAPE AND NC PROCESSING APPARATUS UTILIZING THE METHOD

Sei Moriyasu, Tokyo; Hitoshi Ohmori, Wako; Takeo Nakagawa, Wako; Ichirou Yamaguchi, Wako, and Jun-Ichi Kato, Wako, all of Japan, assignors to The Institute of Physical and Chemical Research, Saitama, Japan

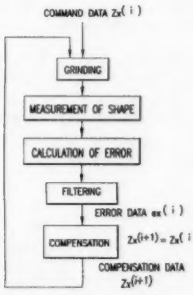
PCT No. PCT/JP96/02294, § 371 Date Dec. 26, 1996, § 102(e) Date Dec. 26, 1996, PCT Pub. No. WO97/06922, PCT Pub. Date Feb. 27, 1997

PCT Filed Apr. 14, 1996, Appl. No. 765,574

Claims priority, application Japan, Aug. 15, 1995, 7-208068

Int. Cl.[6] **B24B** *49/00*

U.S. Cl. 451—5 **9 Claims**



1. A method of grinding a work with a grinding wheel, comprising the steps of:

disposing an electrode spaced away from and facing an electrically conductive grinding wheel, applying a voltage across said grinding wheel and said electrode while making electrically conductive fluid flow between said grinding wheel and said electrode, numerically controlling a position of said grinding wheel, dressing said grinding wheel by electrolysis, grinding said work in accordance with command data given by a command function $Zx^{(i)}$, where i is an integer indicating the number of times that the command function has been carried out, to produce a ground surface, measuring a shape of the ground surface to obtain measurement data, filtering the measurement data to obtain shape error data $e_x^{(i)}$, compensating for errors in the command data $Zx^{(i)}$ with the shape error data $e_x^{(i)}$ to establish new command data $Zx^{(i+1)}$, and grinding said work again in accordance with the new command data $Zx^{(i+1)}$.

5,910,041

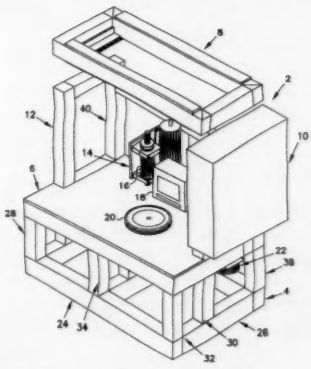
LAPPING APPARATUS AND PROCESS WITH RAISED EDGE ON PLATEN

Wayne O. Duescher, Roseville, Minn., assignor to Keltech Engineering, St. Paul, Minn.

Filed Mar. 6, 1997, Appl. No. 812,012

Int. Cl.[6] **B24B** *5/00*

U.S. Cl. 451—28 **33 Claims**



1. A process for lapping a surface comprising:

a) providing a work piece to be lapped, having at least one surface to be lapped which can be adjusted to a position parallel to said at least one surface of a rotating platen,

b) providing a rotating platen having i) a back surface and ii) a front surface with a periphery, said front surface of said rotating platen having a raised edge symmetrically disposed about said periphery,

c) providing a sheet of abrasive material having an abrasive face and a back side onto said raised edge to provide a symmetrical distribution of abrasive material on said rotating platen, said back side being on said front surface of said platen with the abrasive face of said sheet facing said at least one surface to be lapped,

d) securing said sheet of abrasive material to said front surface of said rotating platen, and

(1) rotating said rotating platen at a rotational speed of at least 500 revolutions per minute, and

(2) contacting said abrasive face and said at least one surface to be lapped on said work piece.

5,910,042

ICE BLASTING CLEANING SYSTEM AND METHOD

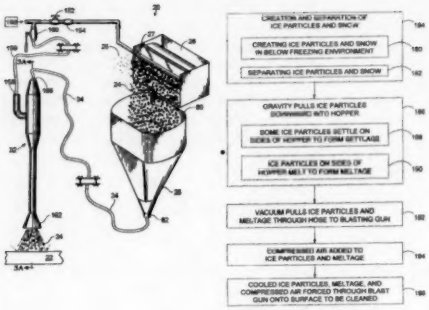
Roman Niechcial, Longview, Wash., assignor to Inter Ice, Inc., La Quinta, Calif.

Continuation-in-part of application No. 08/801,190, Feb. 18, 1997, Pat. No. 5,820,447. This application Jun. 18, 1997, Appl. No. 877,928.

Int. Cl.[6] **B24B** *1/00;7/00*

U.S. Cl. 451—39 **26 Claims**

1. An ice blasting cleaning method for cleaning a surface with ice particles, said method comprising the steps of:


CREATING AND SEPARATION OF ICE PARTICLES AND SNOW
CREATING ICE PARTICLES AND SNOW IN BELOW FREEZING ENVIRONMENT
SEPARATING ICE PARTICLES AND SNOW
GRAVITY PULLS ICE PARTICLES (SOMEWHAT) INTO HOPPER
SOME ICE PARTICLES SETTLE ON SIDES OF HOPPER TO FORM SETTLAGE
ICE PARTICLES ON SIDES OF HOPPER MELT TO FORM MELTAGE
VACUUM PULLS ICE PARTICLES AND MELTAGE THROUGH HOSE TO BLASTING GUN
COMPRESSED AIR ADDED TO ICE PARTICLES AND MELTAGE
COOLED ICE PARTICLES, MELTAGE, AND COMPRESSED AIR FORCED THROUGH BLAST GUN ONTO SURFACE TO BE CLEANED

(a) creating said ice particles and snow;

(b) separating said ice particles from said snow;

(c) said ice particles entering a hopper;

(d) propelling said ice particles toward said surface.

5,910,043

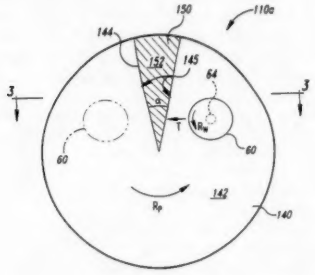
POLISHING PAD FOR CHEMICAL-MECHANICAL PLANARIZATION OF A SEMICONDUCTOR WAFER

Adam Manzonie, Austin, Tex., and Salman Akram, Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 08/700,114, Aug. 20, 1996, Pat. No. 5,738,567. This application Apr. 13, 1998, Appl. No. 59,793.

Int. Cl.[6] B24B *5/00;29/00*

U.S. Cl. 451—285 **24 Claims**



1. A polishing pad for planarizing a microelectronic substrate, comprising:

a planarizing body composed of a matrix material, the body having a firm planarizing surface defining a planarizing region upon which abrasive particles abrasively remove material from a face of a microelectronic substrate during planarization; and

a cleaning element embedded in the planarizing body, the cleaning element being a soft, non-abrasive member to hold a liquid on the polishing pad, the cleaning element having a cleaning surface in a plane at least proximate to the planarizing surface, and the cleaning surface defining a cleaning region within the planarizing region to non-abrasively swab the microelectronic substrate during planarization.

5,910,044

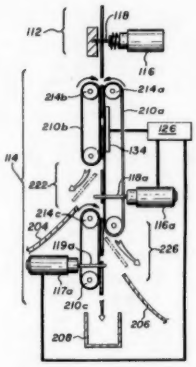
COIN SEPARATOR AND TRANSPORT

Robert A. Luciano, Jr.; Logan L. Pease, both of Reno, Nev.; Robert A. Luciano, Sr., Lebanon, N.J., and Boone McReynolds, Reno, Nev., assignors to International Game Technology, Reno, Nev.

Filed Sep. 30, 1996, Appl. No. 720,590

Int. Cl.[6] G07D *1/00*

U.S. Cl. 453—32 **36 Claims**



28. A method for separating first and second coins comprising:

engaging said first coin with a first engagement device at a first location,

engaging said second coin with said first coin engagement device at said first location in the absence of relative motion between said second coin and said first coin engagement device while said first coin is moving from said first location away from said second coin; and

releasing said second coin from said first location without engaging a third coin at a second location upstream of said first location.

5,910,045

AIR DISCHARGE UNIT FOR UNDERFLOOR AIR CONDITIONING AND UNDERFLOOR AIR CONDITIONING SYSTEM USING SAME

Keisuke Aoki; Kazuto Yamagata; Keigo Ando; Masashi Kamada; Kanjiro Kinoshita, and Kansuke Kimura, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

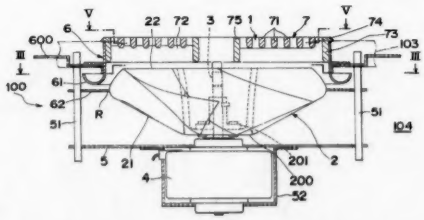
PCT No. PCT/JP96/02553, § 371 Date Mar. 6, 1998, § 102(e) Date Mar. 6, 1998, PCT Pub. No. WO97/09572, PCT Pub. Date Mar. 13, 1997

PCT Filed Sep. 6, 1996, Appl. No. 43,033

Claims priority, application Japan, Sep. 7, 1995, 7-230509

Int. Cl.[6] F24F *7/007*

U.S. Cl. 454—186 **15 Claims**



1. An air discharge unit for underfloor air conditioning comprising:

an outlet provided in a floor panel; a centripetal fan which has a hub and a plurality of blades formed on an outer surface of said hub; and which is disposed opposite to said outlet and within an underfloor chamber formed between said floor panel and a floor slab, and which, in operation, sucks therein air in said underfloor chamber from radially outside and delivers the sucked air generally axially toward said outlet; and

a motor for driving said centripetal fan into rotation.

5,910,046

COMPETITION GAME APPARATUS

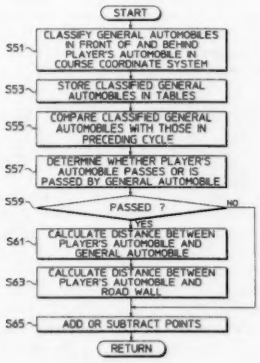
Tetsuya Wada, Kakogawa, and Toru Mizumoto, Takatsuki, both of Japan, assignors to Konami Co., Ltd., Hyogo-ken, Japan

Filed Jan. 29, 1997, Appl. No. 790,694

Claims priority, application Japan, Jan. 31, 1996, 8-035686

Int. Cl.[6] A63F *9/14;* **G09B** *9/04*

U.S. Cl. 463—6 **22 Claims**



1. A competition game apparatus for operation by a player, comprising:

image display processing means for displaying a real-time image including a course established in a game space, a player's movable object movable with respect to the course, and a plurality of other movable objects movable with respect to the course on a display monitor;

driving control means for instructing the player's movable object to run on the course in response to actuation by the player;

player's movable object control means for controlling the player's movable object to run on the course in response to instructions from said driving control means; and

ranking means for ranking the player's movable object based a parameter indicative of skill of the player while the player's movable object is running on the course, said ranking means including:

passing detecting means for detecting whether said player's movable object passes or is passed by one of said other movable objects and producing a passing signal in response thereto; and

parameter varying means for varying a value of the parameter based on the passing signal from said passing detecting means.

5,910,047

COMPUTERIZED LOTTERY WAGERING SYSTEM

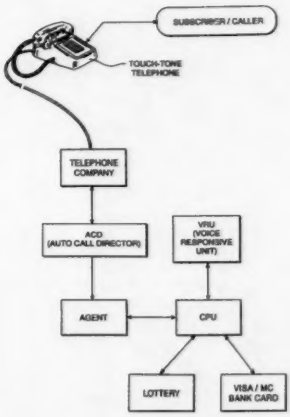
John B. Scagnelli, Homdel, and Joseph A. Fiscella, Maywood, both of N.J., assignors to Lottotron, Inc., Hackensack, N.J.

Continuation of application No. 08/426,145, Apr. 19, 1995, abandoned, which is a continuation-in-part of application No. 08/181,361, Jan. 13, 1994, Pat. No. 5,415,416, which is a continuation of application No. 08/004,633, Jan. 12, 1993, abandoned, which is a continuation of application No. 07/489,814, Mar. 6, 1990, abandoned. This application Nov. 18, 1996, Appl. No. 751,902.

This patent is subject to a terminal disclaimer

Int. Cl.[6] A63F *9/22;* **H04M** *11/06*

U.S. Cl. 463—17 **15 Claims**



1. A wagering system for accepting a plurality of different wagering formats over a telephone comprising:

a) automatic call director means for receiving incoming messages from subscribers and routing each of said messages according to which one of said plurality of different wagering formats is requested by a caller;

b) message responsive means connected thereto for receiving the incoming messages routed from said automatic call director means, for generating a series of messages requesting subscriber wager information to be input, for playing an associated series of audio messages requesting confirmation of the subscriber wager information, and for playing a confirmation message with an associated ticket number assigned to a wager; and

c) host processor means having storage means connected to said message response means for receiving said subscriber wager information, comparing said subscriber wager information to a master subscriber enrollment file for validation, storing said subscriber wager information in a master subscriber wager file in the storage means, and assigning an associated ticket number to the wager.

5,910,048

LOSS LIMIT METHOD FOR SLOT MACHINES

Isadore Feinberg, 1717 St. Georges Rd., Dresher, Pa. 19025

Filed Nov. 29, 1996, Appl. No. 758,439

Int. Cl.[6] A63F *9/24*

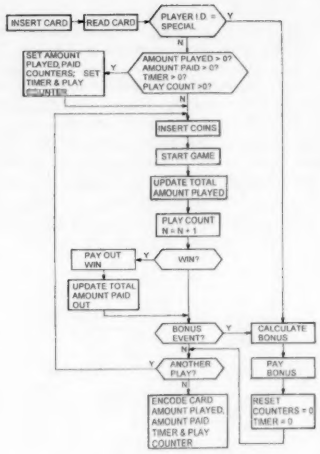
U.S. Cl. 463—25 **10 Claims**

1. A method of operating slot machines to limit player's losses, comprising the steps of:

identifying a player;

tracking an amount played and an amount paid out to the player by a first slot machine;

determining if the player has lost more than a predetermined loss amount;


INSERT CARD
READ CARD
PLAYER I.D. = SPECIAL
Y
N
SET AMOUNT PLAYED,PAID COUNTERS; SET TIMER & PLAY COUNTER
AMOUNT PLAYED > 0? AMOUNT PAID > 0? TIMER > 0? PLAY COUNT >0?
INSERT COINS
START GAME
UPDATE TOTAL AMOUNT PLAYED
PLAY COUNT N = N + 1
PAY OUT WIN
WIN?
UPDATE TOTAL AMOUNT PAID OUT
BONUS EVENT?
CALCULATE BONUS
ANOTHER PLAY?
PAY BONUS
ENCODE CARD AMOUNT PLAYED, AMOUNT PAID TIMER & PLAY COUNTER
RESET COUNTERS = 0 TIMER = 0

if the player has lost more than the predetermined loss amount after one of a predetermined number of plays, a predetermined time of play, and the player stopping further play, crediting the player the difference between the predetermined loss amount and the player's actual loss; and

providing a usage schedule with different predetermined loss amounts associated with different slot machine usage periods, such that the predetermined loss amounts are lower during low slot machine usage periods.

5,910,049

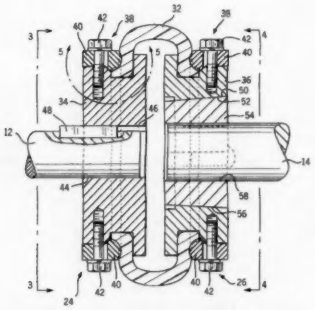
ELASTOMERIC COUPLING SYSTEM

Gary E. DeWachter, Simpsonville; Donald L. Nisley, Greenville, and Suresh S. Tirumalai, Simpsonville, all of S.C., assignors to Reliance Electric Industrial Company, Cleveland, Ohio

Filed Sep. 25, 1997, Appl. No. 937,970

Int. Cl.[6] F16D *3/58*

U.S. Cl. 464—80 **26 Claims**



1. A system for securing first and second generally axially-aligned shafts drivingly to one another, the system comprising:

a first hub having a central axis and configured for mounting on the first shaft, the first hub having a plurality of bores extending generally radially transverse to the central axis thereof;

a second hub having a central axis and configured for mounting on the second shaft, the second hub having a plurality of bores extending generally radially transverse to the central axis thereof;

a flexible coupling element having first and second sides;

a first anchoring assembly, the first anchoring assembly including at least one first anchoring element and a plurality of fasteners, the fasteners being received in the bores of the first hub to secure the first anchoring element to the first hub and to compressively secure the first side of the coupling element to the first hub; and

a second anchoring assembly, the second anchoring assembly including at least one second anchoring element and a plurality of fasteners, the fasteners being received in the bores of the second hub to secure the second anchoring element to the second hub and to compressively secure the second side of the coupling element to the second hub.

5,910,050

SOLID MATRIX CONDITIONING OF SEEDS FOR SORTING PURPOSES

John Alvin Eastin, Lincoln, Nebr., assignor to Kamterter II, LLC, Lincoln, Nebr.

Continuation-in-part of application No. 08/854,500, May 12, 1997, which is a continuation-in-part of application No. 08/369,308, Jan. 6, 1995, Pat. No. 5,628,144, which is a continuation-in-part of application No. 07/975,410, Nov. 12, 1992, abandoned, which is a continuation-in-part of application No. 07/503,826, Apr. 3, 1990, abandoned, which is a continuation-in-part of application No. 07/440,470, Nov. 20, 1989, abandoned, which is a continuation of application No. 07/175,934, Mar. 30, 1988, abandoned, which is a continuation-in-part of application No. 07/034,812, Apr. 3, 1987, Pat. No. 4,912,874. This application Nov. 26, 1997, Appl. No. 979,074.

Int. Cl.[6] A01B *79/00;* **A01C** *1/06;* **C05F** *3/00;* **G08B** *26/00*

U.S. Cl. 47—58 **6 Claims**

1. A method of sorting damaged seeds from undamaged seeds which comprises the steps of:

mixing seeds, a particulate solid matrix material and a seed conditioning amount of water, for a time and at a temperature sufficient to cause the seeds to imbibe sufficient water to enhance water absorbing characteristics of seed material within the seed hull;

after the seeds have been water conditioned adding large amounts of water for a short time to cause swelling of damaged seeds sufficient for separation from undamaged seeds but before harm is done to the undamaged seeds from the water; and

separating the swollen seeds from unswollen seeds by size.

5,910,051

SLEEVE HAVING A DETACHABLE PORTION FORMING A SKIRT AND METHODS

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc.

Continuation of application No. 08/788,616, Jan. 27, 1997, Pat. No. 5,749,171, which is a continuation-in-part of application No. 08/237,078, May 3, 1994, Pat. No. 5,625,979, which is a continuation-in-part of application No. 08/220,852, Mar. 31, 1994, Pat. No. 5,572,851. This application Feb. 12, 1998, Appl. No. 22,958.

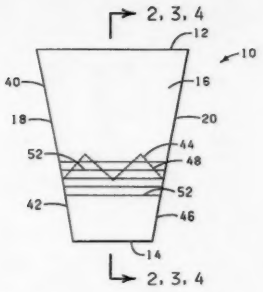
This patent is subject to a terminal disclaimer

Int. Cl.[6] A01G *9/02*

U.S. Cl. 47—72 **30 Claims**

1. A sleeve for covering a pot means having an outer peripheral surface, the tubular sleeve having an initially flattened condition, comprising:

a base portion having a lower end, an upper end, an outer peripheral surface, and an area of excess material comprising one or more preformed creases or folds positioned in a horizontal or diagonal orientation for allowing extension of a portion of the base portion and having an opening extending from the upper end to the lower end and wherein the area of



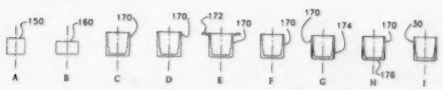
excess material can be expanded to cause portions of the base portion to extend angularly from the base.

5,910,052

PROCESS FOR MANUFACTURING A CAPTIVE SCREW

Thomas J. Ellis, Wilmington, Del.; Edward A. McCormack, Chadds Ford, and Harry L. Dickerson, Downingtown, both of Pa., assignors to Southco, Inc., Concordville, Pa.

Filed Apr. 14, 1998, Appl. No. 59,735
Int. Cl.[6] B21G *5/00*
U.S. Cl. 470—6 **12 Claims**



6. A method of making a knob for a captive screw, said captive screw having a ferrule with a means for attachment of the ferrule to a panel, a screw, the knob integrally attached to said screw, and a knob/ferrule interface to captivate the knob on the ferrule, said method of making the knob comprising:

(a) pressing a generally solid, generally cylindrical slug, by cold-forming, into a cylindrical cup-shaped article using at least one pressing operation, said cup having a cylindrical side wall having an outer surface and a plurality of wall thicknesses, and with a top rim and a solid bottom, excess material from said pressing forming an annular ring around the top rim of the cup;

(b) cold-forming by pressing an annular groove around the bottom of the cup where the solid bottom of the cup meets the cylindrical side walls of the cup;

(c) trimming the excess material that forms the annular ring around the top of the cup, such that the side walls of the cup are flush with the rim of the cup; and

(d) punching a hole in the bottom of the cup, coaxial with the hollow cylindrical walls of the cup, thereby forming a knob.

5,910,053

GOLF-SWING PRACTICE DEVICE

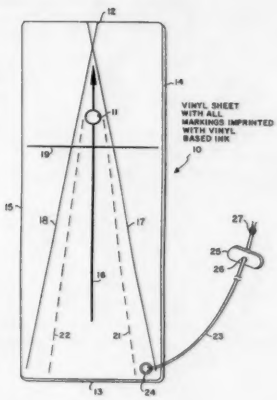
Patrick A. Scalise, West Hollywood, Calif., assignor to AWL Golf, Culver City, Calif.

Filed Jun. 8, 1998, Appl. No. 93,048
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—257 **8 Claims**

1. A golf-swing practice device for aiding in the improvement of a golfer's stroke of a golf ball on a tee with the head of a golf club comprising

a sheet of flexible plastic having an aperture to accommodate said tee for support of said golf ball,

an imprinted center line passing through the center of said aperture,



two lines imprinted on said sheet crossing on one side of said aperture at an acute angle of about 20° between them, each of said two lines being spaced equally from the center of said aperture, and

a bar imprinted on said sheet perpendicular to said center line on a side opposite said one side of said aperture for alignment of the face of said club head perpendicular to said center line in addressing said golf ball on said tee while the golfer's feet and shoulders are aligned parallel to either said center line for an in-line stroke of said ball in a direction in line with said center line or parallel to a selected one of said two crossing lines imprinted at an angle of about 20° between them for a fade or draw stroke of said ball launched along the selected one of said two crossing lines crossing at an acute angle but with a curved flight path back toward said direction in line with said center line.

5,910,054

GRIP FOR HOLLOW GOLF CLUB SHAFTS

Ben Huang, 19472 Woodlands La., Huntington Beach, Calif. 92648

Division of application No. 08/787,828, Jan. 23, 1997, Pat. No. 5,730,669, which is a continuation of application No. 08/567,339, Dec. 28, 1995, abandoned, which is a continuation-in-part of application No. 08/542,009, Nov. 13, 1995, Pat. No. 5,645,501, which is a continuation-in-part of application No. 08/058,313, May 3, 1993, which is a continuation-in-part of application No. 07/953,190, Sep. 29, 1992, abandoned, which is a continuation-in-part of application No. 07/890,383, May 26, 1992, abandoned, which is a continuation-in-part of application No. 07/637,931, Jan. 14, 1991, abandoned. This application Mar. 13, 1998, Appl. No. 42,290.
Int. Cl.[6] A63B *53/14*
U.S. Cl. 473—302 **5 Claims**

1. In combination with a hollow golf club shaft handle:

a strip having an open-pored felt layer having a generally flat inner surface and a smooth closed pore polyurethane layer having its inner surface bonded to the outer surface of the felt layer, with the pores of such polyurethane layer extending generally normal to the longitudinal axis of the strip, and with the felt layer providing strength for the polyurethane layer

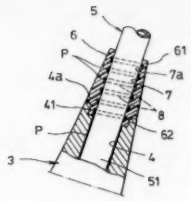
while the polyurethane layer both absorbs shocks and provides tackiness so as to inhibit slippage of a user's hand relative to the shaft;

heat-compressed recessed reinforcing side edges formed in the polyurethane layer of the strip along the length of the strip;

an adhesive between the felt layer of the strip and the golf club shaft handle;

with the strip being spirally wrapped about the upper portion of the golf club shaft to define a grip; and

a cap telescopically received by the interior upper end of the shaft.



5,910,055

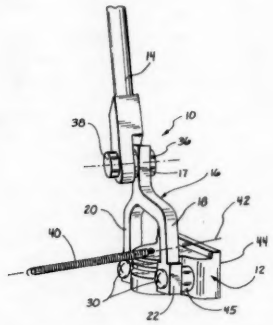
GOLF CLUB

John E. Bennett, 1570 Homewood Dr., Altadena, Calif. 91001

Filed Nov. 24, 1997, Appl. No. 980,694

Int. Cl.[6] A63B *53/02*

U.S. Cl. 473—305 **18 Claims**



1. A golf club comprising:

a shaft;

a club head having a front face, a length along which said front face extends, and a rear portion, said front face being adapted to strike a golf ball and said rear portion having a mounting surface parallel to said front face and two discrete mounting locations disposed thereon;

a hosel frame disposed between said shaft and said club head, said hosel frame comprising two prongs, each of which have a lower portion which extends linearly in a direction parallel to said front face;

the lower portions of each of said prongs being attached to said club head rear portion at corresponding ones of said two mounting locations said club head comprising slots of a predetermined number and depth in an upper half thereof for the purpose of controlling weight and weight distribution.

5,910,056

GOLF CLUB

Itsushi Nagamoto, and Atsushi Tsuchida, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Shizuoka, Japan

Filed Jul. 21, 1998, Appl. No. 120,106

Claims priority, application Japan, Sep. 10, 1997, 9-245226

Int. Cl.[6] A63B *53/02*

U.S. Cl. 473—305 **6 Claims**

1. A golf club wherein:

a tip-end of a club shaft is inserted and bonded via a bonding agent *in a club shaft insertion hole formed in a hosel of a club* head, and

a ferrule member which has a through-hole through which said tip-end of said club shaft is passed in a press-fitted state is mounted in an opening end of said club shaft insertion hole which constitutes a boundary base part of a joint area between *said hosel and said tip-end of said club shaft,*

said golf club being characterized in that a plurality of recessed grooves are formed in an inner circumferential surface of said through-hole of said ferrule member, and said recessed grooves are filled and coated with a bonding agent so that said ferrule member is bonded to said tip-end of said club shaft.

5,910,057

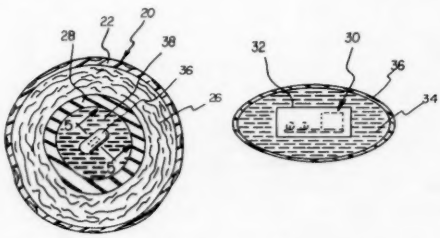
GOLF BALL WITH DISTANCE AND LOCATING SYSTEM

Robert W. Quimby, and Doreen S. Quimby, both of P.O. Box 1053, Ephrata, Wash. 98823, personal representative of said Dorren S. Quimby, deceased

Filed Jan. 16, 1997, Appl. No. 783,354

Int. Cl.[6] A63B *37/08;43/00*

U.S. Cl. 473—353 **8 Claims**



1. A golf ball distance measuring and locating system comprising a transmitter positioned concentrically within a golf ball and having transmitting circuitry adapted to transmit a constant high frequency signal; and

a receiver for detecting said high frequency signal, said receiver having a visual display and processing circuitry for calculating and displaying on said visual display the distance of said golf ball from said receiver to thereby inform a golfer of said distance;

wherein said transmitter is positioned within an impermeable encasement, wherein said impermeable encasement is positioned within a protective gel contained by a gel container positioned within said golf ball for reducing the chance of damage to said transmitter upon striking of said golf ball by said golfer.

5,910,058

PORTABLE PLAY STRUCTURES

Yu Zheng, Covina, Calif., assignor to Patent Category Corp., *Monrovia, Calif.*

Filed Mar. 17, 1998, Appl. No. 42,852

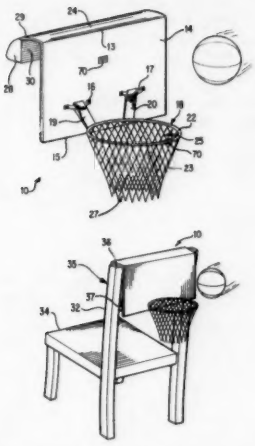
Int. Cl.[6] A63B *63/08*

U.S. Cl. 473—481 **13 Claims**

1. A structure adapted to be supported on a support member, comprising:

a backboard having a weight;

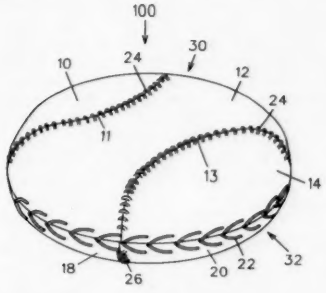
a basket having a weight and including a rim coupled to the backboard, said rim having an operative state wherein the rim



is substantially normal to the backboard and a compact configuration wherein the rim is substantially parallel to the backboard; and

a weight member hingedly coupled to the backboard and having sufficient weight to counterbalance the weight of the backboard and the basket.

5,910,059
GAME APPARATUS
Thomas E. Hanson, 24041 Farmington Rd., Farmington, Mich. 48336
Filed Dec. 9, 1997, Appl. No. 987,522
Int. Cl.[6] A63B *37/02*
U.S. Cl. 473—594 **18 Claims**



1. An improved game bag comprising:

a pair of congruent upper and lower panels formed of a resilient material with each panel presenting a periphery, each of said panels further comprising:

first and second congruent subpanels with an intermediate subpanel therebetween;

a line of flexion between each of said subpanels and said intermediate subpanel, said lines of flexion providing a flexibility therealong greater than the flexibility of said resilient material of said upper and lower panels;

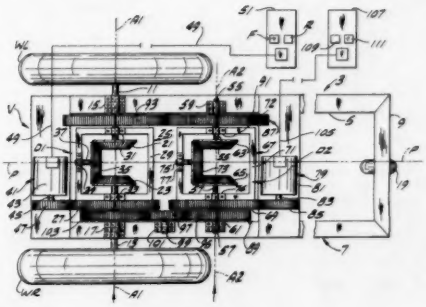
a first line of stitching for joining said panel peripheries in alignment to present a housing therebetween;

a second line of stitching along said lines of flexion in each subpanel;

a plurality of pellets disposed within said housing;

lacing extending about said stitched panel peripheries and across said first line of stitching for protecting said first line of stitching of said panel peripheries, a contact of an upper or lower panel of the hand bag with a back of a player's hand deforming at least one of said subpanels of said contacted upper or lower panels and flexing said at least one contacted subpanel along a respective line of flexion between said suboanels, said deforming causing an opposed subpanel on an noncontacted upper or lower panel to expand, whereby to impart an effective lift to said hand bag.

5,910,060
TRANSMISSION
David B. Blume, 2970 N. Highway 61, Troy, Mo. 63379
Filed Mar. 5, 1998, Appl. No. 35,715
Int. Cl.[6] B60K *6/00*
U.S. Cl. 475—28 **10 Claims**



1. A transmission comprising:

a first differential having a first and a second output shaft, each rotatable on a first axis;

said first differential comprising a first output gear on the first output shaft and a second output gear on the second output shaft;

said first differential further comprising a first planetary gear carrier rotatable in one direction or the other about said first axis, and at least one planetary gear carried by said first carrier for rotation with said carrier in one direction or the other about said first axis in mesh with said first and with said second output gears;

said first planetary gear carrier being adapted to be power driven in one direction or the other for driving said first and second output shafts both in one direction or both in the opposite direction about said first axis;

a second differential having a third and a fourth output shaft, each rotatable on a second axis;

said second differential comprising a third output gear on said third output shaft and a fourth output gear on said fourth output shaft;

said second differential further comprising a second planetary gear carrier rotatable in one direction or the other about said, second axis, and at least one planetary gear carried by said second carrier for rotation with said second carrier in one direction or the other about said second axis in mesh with said third and fourth output gears;

said second planetary gear carrier being adapted to be driven in one direction or the other about said second axis for driving said third and fourth output shafts both in one direction or both in the opposite direction about said second axis;

a first drive from said third output shaft to said first output shaft; and

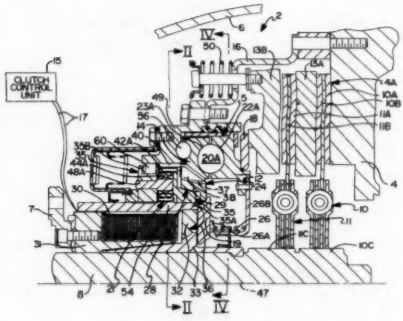
a second drive from said fourth output shaft to said second output shaft with said second drive operable in reverse to said first drive.

5,910,061

BALL RAMP DRIVELINE CLUTCH ACTUATOR WITH UNIDIRECTIONAL APPLY

Gregory J. Organek, Detroit, and David M. Preston, Clarkston, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 30, 1997, Appl. No. 940,330
This patent is subject to a terminal disclaimer
Int. Cl.[6] F16D *27/11;13/04*
U.S. Cl. 475—149 ***8 Claims***



1. A ball ramp actuator for rotationally coupling two rotating elements comprising:

an input element driven by a prime mover and rotating about an axis of rotation;

an output element having an axis of rotation coaxial with said axis of rotation of said input element for rotating an output device;

a ball ramp mechanism for generating an axial movement comprising; an annular control ring having an axis of rotation, said control ring having a plurality of circumferential control ramps formed in a first face of said control ring, said control ramps varying in axial depth, an equivalent number of rolling elements one occupying each of said control ramps, an actuation ring having an axis of rotation coaxial with said axis of rotation of said control ring, said actuation ring having a plurality of actuation ramps substantially identical in number, shape and radial position to said control ramps where said actuation ramps at least partially oppose said control ramps and where each of said rolling elements is contained between one of said actuation ramps and a respective control ramp, said control ring being axially and rotationally moveably disposed relative to said actuation ring;

a planetary gearset having an annulus frictionally rotationally connected to said control ring with a clutch coupling where a plurality of planet gears engage both said annulus and a sun gear, said sun gear nonrotatably coupled to said output element and said planet gears are each rotatably supported on respective secondary one-way clutches mounted on respective carrier pins where said carrier pins are supported on a clutch ring;

a coil for inducing an electromagnetic field in said clutch coupling; and

a primary one-way clutch connected to said input element and connected to said clutch ring operating to prevent said clutch ring from rotating with respect to said input element in a direction resulting in deactivation of said ball ramp mechanism;

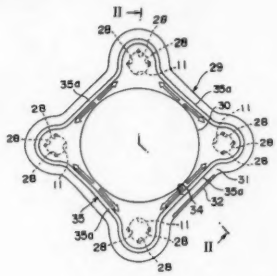
where said secondary one-way clutches operating within said planetary gearset provides rotation of said control ring relative to said actuation ring in a direction to activate said ball ramp mechanism irrespective of the relative rotation of said input element and said output element.

5,910,062

LUBRICATING STRUCTURE OF AUTOMATIC TRANSMISSION

Muneo Mizuta, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Jul. 23, 1997, Appl. No. 899,148
Claims priority, application Japan, Jul. 23, 1996, 8-193212
Int. Cl.[6] F16H *57/04*
U.S. Cl. 475—159 **5 Claims**



1. A lubricating structure of an automatic transmission comprising:

a sun gear disposed along a rotational-center axis;

a plurality of pinions disposed around said sun gear for engaging with said sun gear;

a plurality of pinion shafts holding said pinions, respectively, so that said pinions can rotate freely;

a carrier which includes two carrier plates holding each end of said pinion shafts;

a plurality of oil paths, each of them being formed through one of said two carrier plates or said pinion shafts in an axial direction of said pinion shafts; and

an oil catching member disposed circularly around the rotational-center axis on a surface of said one of said two carrier plates, the surface being opposite to a surface of the one on which said pinions are disposed, said oil catching member catching lubricating oil supplied from the rotational-center axis and leading the lubricating oil to said oil paths;

wherein an oil seal line defined by contact of said oil catching member with said one of said two carrier plates includes rectilinear portions between the pinion shafts adjacent to each other and one or more projecting portions enclosing said pinion shafts so that the lubricating oil caught by said oil catching member is caused to flow toward respective openings of said oil paths on the side opposite to the side on which said pinions are disposed by centrifugal force generated by rotation of the automatic transmission about the rotational-center axis.

5,910,063

LUBRICATING STRUCTURE OF PLANETARY GEAR

Tatsuya Kato, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Aug. 25, 1997, Appl. No. 917,284
Claims priority, application Japan, Aug. 28, 1996, 8-227096
Int. Cl.[6] F16H *3/44*
U.S. Cl. 475—159 **4 Claims**

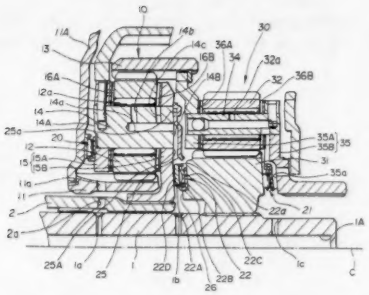
1. A lubricating structure of a planetary gear, comprising:

a pinion shaft having a pinion rotatably positioned around the pinion shaft;

a pair of carrier plates holding the pinion shaft at opposite end portions thereof;

an internal lubricating oil path formed in the inside of the pinion shaft, the oil path extending from an axial end face of the pinion shaft at a side of one of the carrier plates to an outer peripheral surface of the pinion shaft;

a thrust bearing adjacent to the one carrier plate at a radially inner position relative to the pinion shaft; and



a guide member fixed to the axial end face of the pinion shaft at a radially outer position with respect to the thrust bearing for guiding the lubricating oil into the internal lubricating oil path,

wherein a groove is formed between the thrust bearing and the one carrier plate to connect a space at radially inner side of the thrust bearing with a space at radially outer side of the thrust bearing to allow the lubricating oil to flow therethrough to the guide member.

5,910,064

DIFFERENTIAL APPARATUS

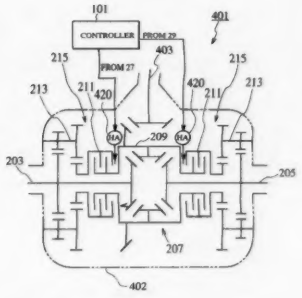
Tadashi Kuroki, Tochigi-ken, Japan, assignor to Tochigi Fuji Sangyo Kabushiki Kaisha, Japan

Filed Jan. 15, 1998, Appl. No. 7,353

Claims priority, application Japan, Jan. 16, 1997, 9-005713

Int. Cl.[6] B60K *23/04*

U.S. Cl. 475—199 **8 Claims**



1. A differential apparatus comprising:

a differential mechanism having:

a differential casing for receiving drive power from an engine of a vehicle; and

a pair of output members for distributing the received drive power to a pair of left and right axles of the vehicle;

a pair of drive power control mechanisms each respectively comprising:

a combination of a speed change mechanism and a friction clutch for a serial connection between the differential casing and either output member; and

an actuator for actuating the friction clutch to be engaged; and

a controller for controlling a pair of the actuators to have a pair of the friction clutches periodically engaged and disengaged in an alternating manner with a relatively short period.

5,910,065

TRANSMISSION WITH CREEP GEAR

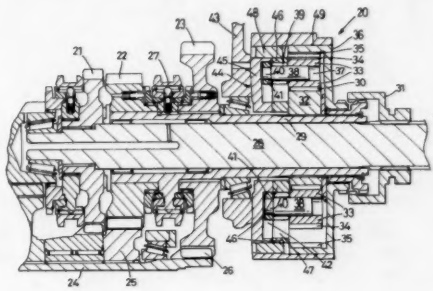
***Roger Michael Weyman, and John Graham Willacy, both of* Coventry, United Kingdom, assignors to AGCO Limited, Coventry, United Kingdom**

Filed Jul. 11, 1997, Appl. No. 891,575

Claims priority, application United Kingdom, Jul. 26, 1996, 9615703

Int. Cl.[6] F16H *37/02;1/32*

U.S. Cl. 475—207 **7 Claims**



1. A vehicle transmission comprising:

an input shaft;

an output shaft;

a gear box including an input drive driven by said input shaft and an output drive driven by said input drive at any one of a plurality of selectable ratios;

a planocentric gearset; and

a coupling mechanism operable in a first mode, wherein said output shaft is driven by said output drive bypassing said planocentric gearset, and a second mode, wherein said output shaft is driven by said output drive through said planocentric gearset so as to provide an additional range of gears.

5,910,066

PLANETARY GEAR

Horst Schulz, Friedrichshafen, and Bernd Somschor, Tettnang, both of Germany, assignors to ZF Friedrichshafen AG, *Friedrichshafen, Germany*

PCT No. PCT/EP96/01170, § 371 Date Aug. 22, 1997, § 102(e) Date Aug. 22, 1997, PCT Pub. No. WO96/29526, PCT Pub. Date Sep. 26, 1996

PCT Filed Mar. 19, 1996, Appl. No. 894,572

Claims priority, application Germany, Mar. 23, 1995, 195 10 499

Int. Cl.[6] F16H *1/36*

U.S. Cl. 475—336 **14 Claims**

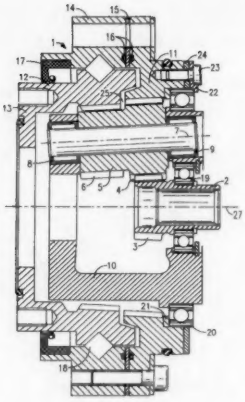
1. A planetary gear arrangement (**1**) comprising:

a shaft driving a sun gear (**3**) with external teeth; and

a first ring gear (**11**) with radially inwardly extending teeth and an adjacent second ring gear (**12**) with radially inwardly extending teeth;

wherein said first ring gear (**11**) is fixedly mounted and said second ring gear (**12**) is rotatably mounted and forms an output of said planetary gear; and

a plurality of planets (**5**, **26**), with external teeth, are each supported by a planet carrier (**10**) upon a rotatable axle (**7**), and said external teeth of said plurality of planets (**5**) having a constant meshing engagement with said teeth of said sun gear (**3**) and said teeth of said first and second ring gears (**11**, **12**), said plurality of planets (**5**, **26**) are each step gears which have a small step gear (**6**) and a large step gear (**4**); and said small gear (**6**) and said large step gear (**4**) each have the same number of teeth and the same relative orientation of the teeth, but the teeth of the small step gear (**6**) having a different tooth



module from the teeth of the large step gear (**4**) for all of said plurality of planets (**5**) forming said planetary gear arrangement.

5,910,067

FINAL DRIVE GEAR RATIO SELECTION SYSTEM FOR A HARVESTER

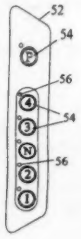
Jean-Pierre Vandendriessche, Koutergatstraat 20, B-9420 Erpe-Mere; Stephan P.G. Deneir, Stroobomestraat 19, B-8890 Moorslede; Dries M.J. Depreitere, Pereboomstraat 5, B-8680 Koekelare, and Gino L. Deceuninck, Acacialaan 9, B-8470 Gistel, all of Belgium

Filed Jul. 14, 1997, Appl. No. 891,965

Claims priority, application United Kingdom, Jul. 20, 1996, 9615281

Int. Cl.[6] B60K *41/20;41/26*

U.S. Cl. 477—92 **13 Claims**



1. A method of selecting a final drive gear ratio in a harvester hydrostatic transmission comprising the steps of selecting the desired ratio by manually depressing a button on a control panel, manually placing the hydrostatic transmission into neutral before the automatic change in final drive ration can be performed, automatically activating a brake to bring and maintain the harvester at a standstill in response to the depression of the button on the control panel, and activating a gear selection mechanism to select the desired gear ratio only after the harvester has come to a complete stop.

5,910,068

COUNTERSHAFT AUTOMATIC GEARBOX, IN PARTICULAR AN AUTOMATIC GEARBOX FOR MOTOR VEHICLES

Christian Krauss, Cologne; Rolf Najork, Odenthal; Thomas Wollny, and Thomas Flintrop, both of Cologne, all of Germany, assignors to Ford Global Technologies, Inc., Dearborn, Mich.

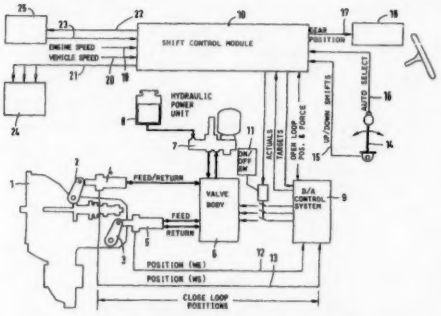
PCT No. PCT/EP96/03048, § 371 Date Jan. 12, 1998, § 102(e) Date Jan. 12, 1998, PCT Pub. No. WO97/04254, PCT Pub. Date Feb. 6, 1997

PCT Filed Jul. 11, 1996, Appl. No. 930,123

Claims priority, application Germany, Jul. 19, 1995, 195 26 273

Int. Cl.[6] F16H *61/40*

U.S. Cl. 477—109 **20 Claims**



1. An automatically shiftable countershaft transmission for a vehicle, comprising:

a transmission housing;

a gear system within said housing having a plurality of gear ratios for transmitting a dynamic load and a gear step comprising a shift from a first one of said ratios to a second one of said ratios;

synchronizing means for synchronizing said gear system;

shifting means for actuating said synchronizing means over a shift travel through a plurality of shift phases when shifting said gear system to one of said gear ratios;

a servo for applying a shift force for actuating said shifting means;

a sensor for detecting a position of said servo means and generating a servo position signal in response thereto; and

a computer for receiving said servo position signal from said sensor and varying said shift force as a function of gear step and dynamic load when shifting said gear system through said gear step.

5,910,069

TRANSMISSION SYSTEM CONTROL SYSTEM/METHOD INCLUDING ADAPTIVE CONTROL FOR ENGINE DECELERATION DEVICE

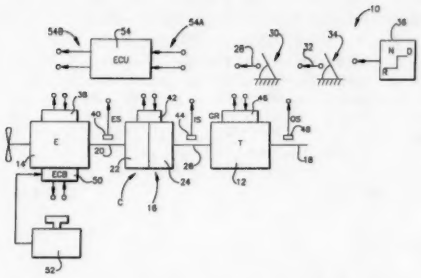
Ronald K. Markyvech, Allen Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1997, Appl. No. 996,246

Int. Cl.[6] F01L *1/34*

U.S. Cl. 477—109 **6 Claims**

1. A control method for controlling upshifting in a vehicular, at least partially automated mechanical transmission system (**10**) comprising a throttle controlled engine (**14**) a mechanical change gear transmission (**12**) having a plurality of gear ratio combinations selectively engageable between a transmission input shaft (**26**) and a transmission output shaft (**18**), each of said gear ratio combinations defining a numerical ratio of input shaft rotational speed to output shaft rotational speed, an information processing unit (**54**) having means for receiving a plurality of input signals including an input signal (ES) indicative of the rotational speed of



said engine and an input speed (OS) indicative of the rotational speed of said output shaft and means for processing said input signals in accordance with predetermined logic rules for generating command output signals (**54B**) whereby said transmission system is operated in accordance with said logic rules, an engine brake (**50**) selectively actuatable to provide a retarding torque to rotation of said engine, and actuators responsive to said command output signals including an engine brake actuator for selectively applying said engine brake, said control method characterized by the steps of, upon initiating an engine brake-assisted upshift into a target gear ratio (GR_T) by activating the engine brake after sensing a transmission-neutral condition:

(a) sensing values indicative of one or more of engine speed, rate of change of engine speed, output shaft speed, and rate of change of output shaft speed;

(b) determining an engine brake reaction time ($T_{REACTION}$) value indicative of a period of time required for the engine brake to cease providing a retarding torque to resist rotation of the engine from initiation of a command signal to said engine brake actuator to deactivate said engine brake;

(c) issuing a command signal to said engine brake actuator to deactivate said engine brake at a time determined as a function of (i) the numerical ratio of the target gear ratio (GR_T), (ii) one or more of output shaft speed and rate of change thereof, (iii) one or more of engine speed and rate of change thereof and (iv) engine brake reaction time.

(d) after the passage of said reaction time from issuing said command signal to said engine brake actuator, sensing the then current value of the rate of change of engine speed (dES/dt) and modifying said engine brake reaction time as a function of said current value of said rate of change of engine speed.

5,910,070
WEIGHTED HAND-CONTROLLER FOR REMOTE CONTROL OF EXERCISE APPARATUS

George F. Henry, Woodinville, and James S. Birrell, Seattle, both of Wash., assignors to Precor Incorporated, Bothell, Wash.

Continuation of application No. 08/635,456, Apr. 19, 1996, abandoned, which is a continuation of application No. 08/377,910, Jan. 25, 1995, abandoned. This application Oct. 8, 1997, Appl. No. 946,899.

Int. Cl.[6] A63B *21/075;22/00*

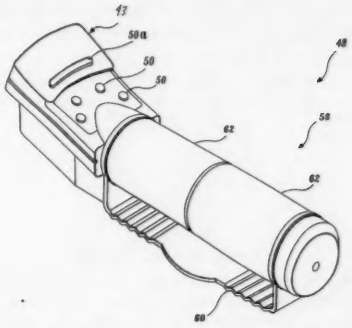
U.S. Cl. 482—4 **7 Claims**

1. A handheld controller for controlling an exercise apparatus having a plurality of exercise levels, one of the plurality of exercise levels being selectable based on a control signal received by a receiver in the exercise apparatus, the handheld controller comprising:

(a) a plurality of weights couplable to form a handle for manually grasping the handheld controller;

(b) a strap coupled to the plurality of weights, to prevent unintentional dropping of the handheld controller;

(c) a transmitter coupled to the plurality of weights for generating and transmitting a control signal corresponding to a desired exercise level; and



(d) manually operable control means connected to the transmitter, the control means causing the transmitter to selectively transmit a control signal corresponding to a desired exercise level.

5,910,071
PORTABLE, PERSONAL BREATHING APPARATUS

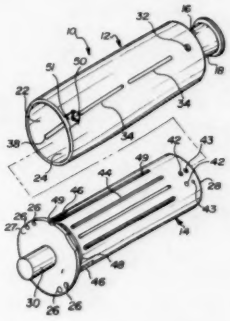
Everett D. Hougen, 5463 Sugarbush, Flint, Mich. 48503

Continuation of application No. 08/478,741, Jun. 7, 1995, Pat. No. 5,658,221, and a continuation-in-part of application No. 08/386,375, Feb. 10, 1995, abandoned. This application Aug. 18, 1997, Appl. No. 912,433.

This patent is subject to a terminal disclaimer

Int. Cl.[6] A63B *23/18*

U.S. Cl. 482—13 **11 Claims**



11. A lung exercising apparatus comprising:

a outer and inner member adapted to move with respect to one another, a mouthpiece communicating with the outer and inner members to permit a user to inhale and exhale through the mouthpiece and outer and inner members;

each of the outer and inner members having dissimilar openings which are adapted to be aligned by moving the outer and inner members with respect to one another to provide varied resistance to the user inhaling and exhaling through the mouthpiece;

the dissimilar openings including at least one outer hole and at least one outer slot formed in the outer member and a plurality of inner holes and at least one inner slot formed in the inner member;

the plurality of inner holes having different diameters;

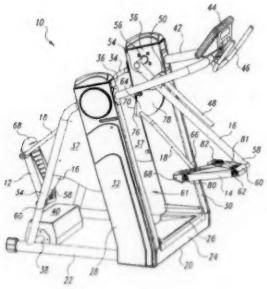
at least one of the inner holes being adapted to mate with at least one outer hole to vary resistance to inhaling and exhaling, the inner member being longitudinally moveable with respect to the main body to further vary resistance by sliding the inner hole with respect to the outer hole to partially open and close the inner and outer holes as a result of inhaling and exhaling;

the outer slot and the inner slot being adapted to be aligned to permit limited rotation of the inner cylinder with respect to the main body to permit both resistive and percussive exercises to be performed by the user by manipulating the position of the outer and inner members with respect to one another.

5,910,072
EXERCISE APPARATUS

R. Lee Rawls, Woodinville; James A. Duncan, Newcastle, and John Arthur Ohrt, Redmond, all of Wash., assignors to StairMaster Sports/Medical Products, Inc., Kirkland, Wash.

Filed Dec. 3, 1997, Appl. No. 984,573
Int. Cl.[6] A63B *22/00*
U.S. Cl. 482—51 **101 Claims**



49. An exercise apparatus for a user to exercise while standing on the user's feet, comprising:

right and left foot pedals, said right and left pedals being laterally spaced apart and each having a forward end portion to receive a forward end portion of the user's corresponding foot thereon and a rearward end portion to receive a rearward end portion of the user's corresponding foot thereon;

a right pedal swing member supporting said right pedal for rearward and forward swinging motion and having a lower end portion attached to said right pedal for rearward and forward reciprocating movement of said right pedal therewith along a right path, said lower end portion of said right swing member supporting said right pedal for downward and upward rotational movements of said rearward end portion thereof relative to said forward end portion thereof in user variable amounts during the exercise;

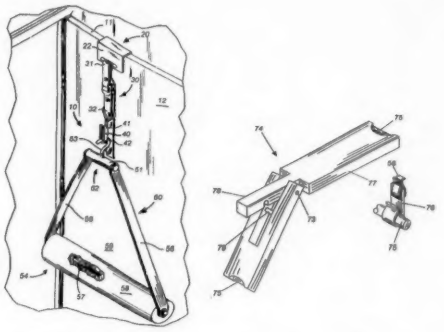
a left pedal swing member supporting said left pedal for rearward and forward swinging motion and having a lower end portion attached to said left pedal for rearward and forward reciprocating movement of said left pedal therewith along a left path, said lower end portion of said left swing member supporting said left pedal for downward and upward rotational movements of said rearward end portion thereof relative to said forward end portion thereof in user variable amounts during the exercise; and

a lift control member engaging said right and left pedals, in response to said downward movement of said rearward end portion of said left pedal, said lift control member moving said rearward end portion of said right pedal upward, and in response to said downward movement of said rearward end portion of said right pedal, said lift control member moving said rearward end portion of said left pedal upward.

5,910,073
APPARATUS FOR EXERCISING ABDOMINAL MUSCLES AND METHOD

Gary W. Conner, 1056 Quail Hill Ave., Newton, N.C. 28658

Continuation-in-part of application No. 09/056,008, Apr. 6, 1998, which is a continuation-in-part of application No. 08/710,169, Sep. 12, 1996, Pat. No. 5,766,118, Provisional application No. 60/008,814, Dec. 18, 1995. This application Oct. 20, 1998, Appl. No. 175,889.
Int. Cl.[6] A63B *00/69*
U.S. Cl. 482—129 **6 Claims**



1. An apparatus for exercising the abdominal muscles, said apparatus comprising:

a) clamping means for fixing the apparatus to a vertical surface;

b) at least one elongate, elastic resistance band having opposed ends, one the opposed ends of said resistance band attached to said clamping means; and

c) a resistance harness, said resistance harness comprising:

i) attachment means for attaching said resistance harness to the other of the opposed ends of said at least one resistance band;

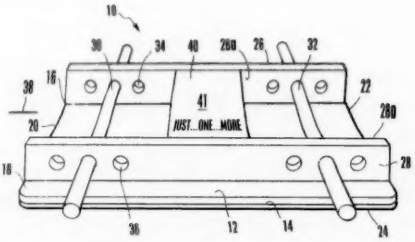
ii) an elongate collapsible resistance bar having opposed ends, said resistance bar comprising an inner bar formed of opposed halves and a hinge joint for folding said opposed halves against one another; and

iii) at least one connecting strap having a first end secured to said resistance bar and a second end secured to said attachment means.

5,910,074
HAND BASE FOR PUSH-UPS

Joe E. Purdie, 3159 Casa Bonita Dr., Bonita, Calif. 91902

Filed Feb. 18, 1997, Appl. No. 799,215
Int. Cl.[6] A63B *23/02*
U.S. Cl. 482—141 **5 Claims**



1. An exercise device, comprising:

at least one flat base including a bottom surface configured for resting horizontally on a surface;

at least front and rear elongated flanges touching the base and horizontally extending along front and rear sides of the base in their direction of elongation, the flanges rising vertically upwardly relative to the base, each flange being formed with plural apertures arranged horizontally therealong, the apertures being formed integrally with the flanges, each aperture defining a first diameter; and

at least left and right dowels, each dowel defining a second diameter smaller than the first diameter, the dowels being respectively slidably engaged with pairs of apertures, whereby each dowel can be removed by hand by a user from one pair of apertures and replaced into another pair of aperture to thereby facilitate spacing the dowels apart as desired by the user, the dowels being configures for grasping thereof by a person's hand.

5,910,075

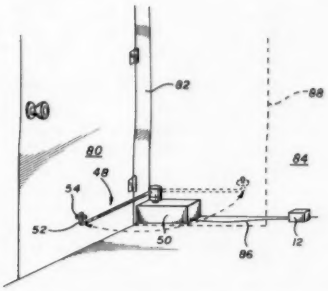
PORTABLE REMOTE-CONTROLLED DOOR CLOSER

Louis G. Arnell, 3008 Caminito Niquel, San Diego, Calif. 92117; Leon Arnell, 1 Barbara La., Monsey, N.Y. 10952, and Thomas P. Sturges, 2505 Crest Dr., Manhattan Beach, Calif. 90266

Continuation-in-part of application No. 08/654,042, May 28, 1996, Pat. No. 5,727,348, Provisional application No. 60/006,252, Nov. 7, 1995. This application Feb. 10, 1998, Appl. No. 21,179.

Int. Cl.[6] **E05F** *15/20*

U.S. Cl. 49—25 **19 Claims**



1. A portable apparatus which closes a door, said apparatus comprising:

(a) force exerting means in an initial position freely adjacent the door which in a second position engages a surface of the door in a closing motion to move the door from an opened position to a closed position;

(b) control means responsive to a remote actuation signal for controlling the force exerting means engagement with the door in a closing motion;

(c) a portable housing which houses the control means and the force exerting means in a free standing position on a floor juxtaposed to a wall adjacent to the opened position of the door such that upon operation of the force exerting means to move the door to the closed position the housing is prevented from moving relative to said position.

5,910,076

EXTENSIBLE WINDOW AND DOOR GUARD

Joe Louis Gladney, 2301 Sinclair La., Baltimore, Md. 21213

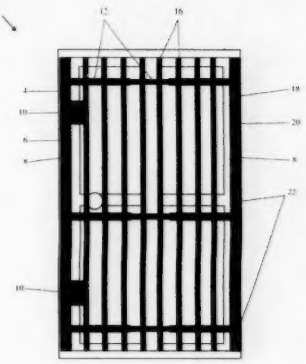
Filed Jul. 15, 1997, Appl. No. 914,050

Int. Cl.[6] **E06B** *3/68*

U.S. Cl. 49—55 **4 Claims**

1. A security apparatus, comprising:

a security grill having an extending left section and right section, said left section further comprising a left vertical support member, a plurality of tubular lateral support members extending rightwardly therefrom, and a plurality of vertical bars attached to and supported by said lateral support members, and said right section further comprising a right vertical support member, a plurality of tubular lateral support members extending leftwardly therefrom, and a plurality of vertical bars attached to and supported by said lateral support members;



a plurality of intermediate extension members each inserted into a corresponding pair of said left and right tubular lateral support members and slidable therein to allow extension of said left security grill section with respect to said right section;

wherein each said intermediate extension member is provided with a plurality of holes on a rear surface of each of said intermediate extension members, and each said tubular lateral support member is provided with a plurality of hoes on a rear surface of each said tubular lateral support members, said holes on said intermediate extension members being in alignment with said holes in said tubular lateral support members for receiving a locking member through said aligned holes to lock the security apparatus at a desired width;

a plurality of vertical bars rigidly affixed to and supported by said plurality of intermediate extension members;

a left angle bracket for securing one side of said security grill to one of a door and a window frame;

a right angle bracket for securing another side of said security grill to an opposing side of one of said door and window frame;

whereby said security apparatus may be attached exteriorly to one of a door and a window frame to prevent forcible entry.

5,910,077

DOOR ACTUATED EXTENDABLE STRAP HANDLE

Curtis D. Aumiller, Holland, and Rick A. Anderson, Grand Haven, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Oct. 8, 1996, Appl. No. 727,031

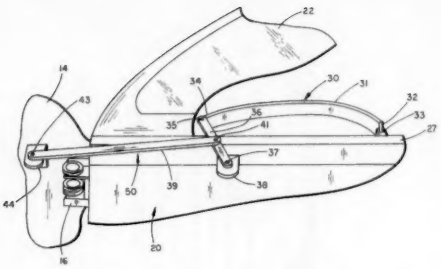
Int. Cl.[6] **E05F** *7/08;* **E05B** *1/00*

U.S. Cl. 49—460 **18 Claims**

13. A door for a vehicle having a door jamb, the door being movable between a closed position and an open position, the door comprising:

a flexible strap having one end pivotally mounted to a fixed location on the door and an opposite end; and

a control mechanism coupled to said opposite end of said strap and movable in response to movement of the door between the closed position and the open position for moving said opposite end of said strap toward said one end for extending



said strap away from said door for easy access to the strap when the door is in the open position.

5,910,078

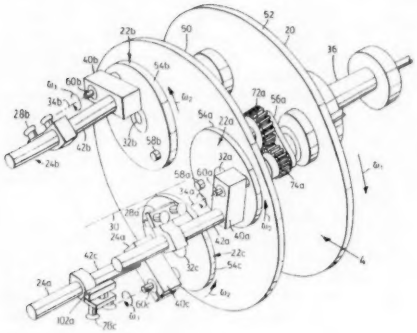
ROTARY OBJECT FEEDER

Peter Guttinger, Milton; Tony Spadafora, Ancaster, and Michael Elent, Vaughan, all of Canada, assignors to H. J. Langen & Sons, Inc., Mississauga, Canada

Continuation of application No. 08/535,945, Sep. 28, 1995, abandoned. This application Aug. 29, 1997, Appl. No. 920,880.

Int. Cl.[6] B31B *1/78*

U.S. Cl. 493—309 **40 Claims**



1. A rotary object feeder, comprising:

a support;

a carrier member rotatably mounted to said support at a sun axis of rotation for rotation at a constant angular velocity ω_1 about said sun axis;

a planetary member rotatably mounted to said carrier member at a planetary axis of rotation spaced from said sun axis of rotation at a distance D/2, said planetary member mounted for rotation at a constant planetary angular velocity ω_2 about said planetary axis;

a moon member rotatably mounted to said planetary member at a moon axis of rotation spaced from said planetary axis of rotation at a distance e, said moon member mounted for rotation at a constant moon angular velocity ω_3 about said moon axis;

an object pick-up member mounted to said moon member, having a pick-up surface at an outermost distance $E_m/2$ from said sun axis;

said sun axis of rotation, said planetary axis of rotation and said moon axis of rotation being substantially parallel; and

wherein $(E_m \times \omega_1)/2+\{((E_m-D)\times\omega_2/2)+(((E_m-D)/2-e)\times\omega_3)\}$ substantially equals zero.

5,910,079

METHOD AND APPARATUS FOR MANUFACTURING PAPER CUSHIONING MEMBERS

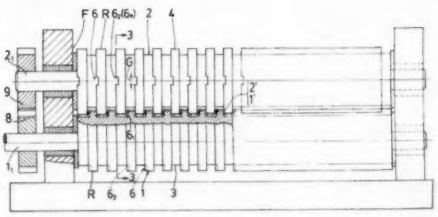
Tokuji Watanabe, Kawaguchi, Japan, assignor to Strapack Corporation, Saitama-ken, Japan

Continuation-in-part of application No. 08/165,474, Dec. 13, 1993, abandoned. This application Sep. 20, 1995, Appl. No. 531,069.

Claims priority, application Japan, Dec. 14, 1992, 4-353576; May 11, 1993, 5-132734

Int. Cl.[6] B31B *1/14*

U.S. Cl. 493—352 **1 Claim**



1. An apparatus for manufacturing paper cushioning members, comprising:

a pair of elongated roller members each having first circumferential recesses and projections of a given width thereon and therearound, such that said first recesses and projections of respective rollers engage with one another, said first circumferential projections each having a circumferential length;

cutting blades formed at peripheral edges of surfaces of said first circumferential projections;

link-portion forming recesses formed in parts of mating circumferential surfaces of said first projections entirely across said first circumferential projections in a horizontal direction, one unit cut length being about three fourths of said circumferential length of said first projections and another unit cut length being about one-fourth of said circumferential length of said first projections;

a wave-forming guide including a top-pressing member and a bottom-receiving member, both located on a discharge side of said roller members;

said wave-forming guide having a passage with a height being set to about one-fourth of said circumferential length of said first projections;

waste-collecting members having second projections and recesses formed on edge portions thereof which engage with said first recesses and projections of said rollers; and

a weight provided at an outlet portion of said top-pressing member.

5,910,080

THERAPEUTIC BEDDING PAD

Daniel E. Selton, 5350 Powers Ferry Rd., Atlanta, Ga. 30327

Continuation-in-part of application No. 08/699,789, Aug. 19, 1996, Pat. No. 5,754,998. This application May 28, 1997, Appl. No. 864,647.

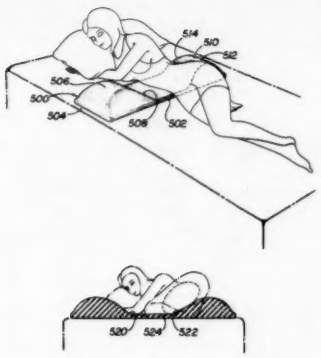
Int. Cl.[6] A47C *21/00;27/14*

U.S. Cl. 5—652 **4 Claims**

1. A therapeutic bedding surface for supporting a person when lying comprising:

a substantially longitudinally disposed body portion;

raised elongated portions disposed laterally along opposite sides of said body portion, said elongated portions being constructed to be elevated above the surface of the body portion and said elongated portions further including inwardly directed concave surfaces rising from said body portion having a sufficient height to receive a portion of the person's body;



said concave surfaces having a similar profile with respect to a central longitudinal axis along a predetermined longitudinal length of said elongated portions; and

said concave surfaces constructed to provide positive pressure support to the body portion received body said concave surface;

wherein a person may be supported in a like manner when being supported by a first concave surface when lying on one's side of the body and when being support by a second concave surface when lying on a different side of the body.

5,910,081

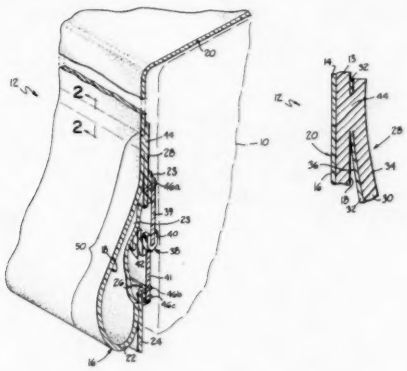
MATTRESS COVER

Theodore J. Graham, Cincinnati, Ohio, assignor to Casco Products, Inc., Cincinnati, Ohio

Filed Apr. 10, 1998, Appl. No. 58,527

Int. Cl.[6] A47C *27/00*

U.S. Cl. 5—699 **16 Claims**



1. A fluid barrier mattress cover having a top member and a bottom member, each of said top and bottom members having outer and inner sides, a bridge strip having first and second sides, said bridge strip being bonded to said inner side of said cover top member, without creating any fluid access through said bridge strip and said cover top member along said bond, a closure having first and second complimentary locking components for closing said cover top member to said cover bottom member, said first locking component being secured to said bridge strip such that the outer side of the cover top member is not pierced by any openings and said second locking component being secured to said cover bottom member.

5,910,082

SOUND-ABSORBING BUILDING PANEL

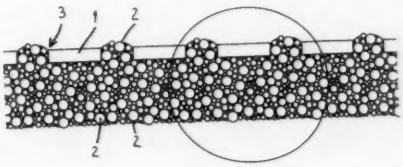
Klaus Bender, Biertal; Robert Wachter, and Bernd Fiedler, both of Wetzlar, all of Germany, assignors to Wilhelmi Werke AG, Lahnua, Germany

Filed Dec. 19, 1997, Appl. No. 994,291

Claims priority, application Germany, Dec. 21, 1996, 196 53 930

Int. Cl.[6] E04B *1/82*

U.S. Cl. 52—144 **20 Claims**



1. In a sound-absorbing building panel for the lining of inside walls and ceilings, comprising a carrier panel to be arranged spaced from a wall and made of a perforated sheet metal, and a sound-absorbing layer covering at least one side of the carrier panel, whereby the sound-absorbing layer comprises a microporous layer which is fixedly connected to the carrier panel and forms at least a visible side of the building panel, the improvement wherein the sound-absorbing layer is formed of granules which are surrounded on all sides by an adhesive coating, wherein the granules are essentially ball-shaped and are essentially connected together by the adhesive coating at point-like connections and to the carrier panel, and wherein a diameter of the granules lies between 0.1 to 0.9 times a hole diameter in the carrier panel.

5,910,083

INTEGRAL SPACER FOR DOOR RAIL

Richard James Richardson, Simi Valley, and Charles E. Crown, San Fernando, both of Calif., assignors to New Anthony, Inc., San Fernando, Calif.

Continuation-in-part of application No. 08/237,558, May 3, 1994, Pat. No. 5,544,454, which is a continuation of application No. 07/849,900, Mar. 12, 1992, Pat. No. 5,363,611, which is a continuation-in-part of application No. 07/644,072, Jan. 18, 1991, Pat. No. 5,113,628, which is a continuation-in-part of application No. 07/585,602, Sep. 20, 1990, Pat. No. 5,097,642. This application Aug. 12, 1996, Appl. No. 695,924.

This patent is subject to a terminal disclaimer

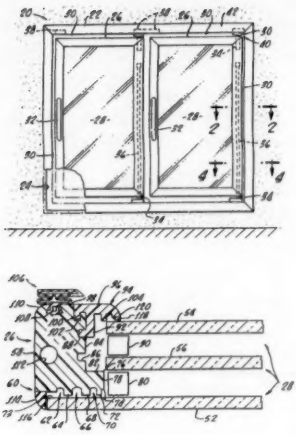
Int. Cl.[6] E06B *3/00*

U.S. Cl. 52—171.1 **29 Claims**

1. A refrigerator door comprising:

a plurality of panels including a forward panel and at least one rearwardly disposed panel;

a door rail element for supporting the plurality of panels such that substantially no part of the rail of at least one door rail element overlaps the forward panel wherein the door rail element includes at least one spacer element extending from the door rail element into a space between adjacent panels of the plurality of panels and wherein the spacer element is part of the door rail element; and



at least one hinge at least partly internal to the door rail element for allowing pivotal movement of the door about an axis.

5,910,084

REINFORCING STRUCTURE FOR VERTICAL FRAME MEMBER OF SASH FRAME

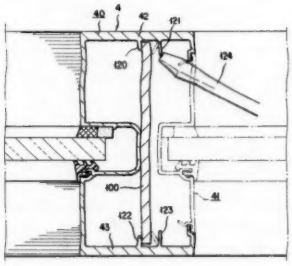
Sou Koike, and Masao Hirano, both of Toyama-ken, Japan, assignors to YKK Architectural Products Inc., Tokyo, Japan

Filed Oct. 30, 1996, Appl. No. 741,114

Claims priority, application Japan, Oct. 31, 1995, 7-283141

Int. Cl.[6] E06B *1/32*

U.S. Cl. 52—204.1 **3 Claims**



1. A reinforcing structure, comprising:

a reinforced vertical frame member having an indoor side vertical plate member, an outdoor side vertical plate member and a connection plate member connecting said indoor side and outdoor side vertical plate members, wherein said indoor side vertical plate member has an indoor side main fin piece and an indoor side auxiliary fin piece, each integrally formed to the indoor side vertical plate member so as to project, substantially parallel to one another, toward said outdoor side vertical plate member, and wherein said outdoor side vertical plate member has an outdoor side main fin piece and an outdoor side auxiliary fin piece integrally formed to the outdoor side vertical plate member so as to project substantially parallel to one another and toward said indoor vertical plate member; and

an elongated plate-like steel reinforcing member attached to said reinforced vertical frame member in the manner that said reinforcing member is inserted between said indoor side main and auxiliary fin pieces and between said outdoor side main and auxiliary fin pieces and fixed to said indoor side and outdoor side main fin pieces by bending and pressing said indoor and outdoor side auxiliary fin pieces onto said reinforcing member.

5,910,085

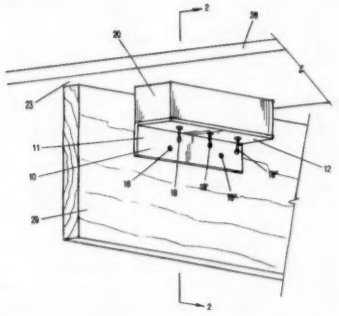
APPARATUS FOR SECURING FLOORS TO ELIMINATE SQUEAKS

Phillip H. Pruett, P.O. Box 209, Fairacres, N. Mex. 88033

Filed Feb. 23, 1998, Appl. No. 28,160

Int. Cl.[6] A47F *5/00;* **E04G** *23/00*

U.S. Cl. 52—291 **16 Claims**



1. An apparatus for securing a first item against a second item, said apparatus comprising:

a main body fixedly fastenable to the first item;

an inelastically compressible member attached to said main body and disposable against the second item; and

at least one spirally threaded connector turnably disposable through said main body and through said compressible member and into the second item;

wherein when said main body is fastened to the first item and said compressible member is disposed against the second item, said connector when turned into the second item draws the second item toward said main body thereby compressing said compressible member.

5,910,086

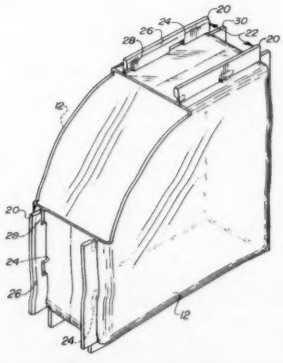
CONSTRUCTION BLOCK STRUCTURE

Myles Fisher, 2006 E. Mallory St., Pensacola, Fla. 32503

Filed Mar. 11, 1996, Appl. No. 613,544

Int. Cl.[6] E04B *5/46;* ***E04C*** *1/42*

U.S. Cl. 52—306 **29 Claims**



1. A non-rectangular-shaped partition structure comprising:

a pane having a pair of facades and at least one outer boundary and comprising a plurality of construction blocks, each of the plurality of construction blocks having a pair of faces joined by a first side edge, a second side edge, a third side edge, and a fourth edge, each of the plurality of construction blocks directly connected, at one of this construction block's edges, to at least one other of the plurality of construction blocks, at one of this construction block's edges a pair of outer spacing flanges extending about the first side edge and the second side edge adjacent and essentially parallel to the faces at least one hook receptacle located along the outer spacing flanges and facing one of the pair of faces, a pair of inner spacing flanges extending about the third side edge and the fourth side edge adjacent and essentially parallel to the faces, and at least one hook, in corresponding number to the number of hook receptacles located along the inner spacing flanges and facing one of the pair of faces each of the at least one hook adapted to be received within a corresponding hook receptacle of the at least one hook receptacle, when one of the plurality of construction blocks is interconnected with another of the plurality of construction blocks; and

wherein at least one of the plurality of construction blocks has a portion removed, with the boundary at the line of removal defining at least in part, the outer boundary, in order to make up the structure.

5,910,087

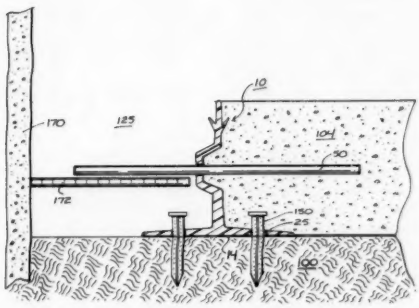
CONTROL JOINT FOR FORMING CONCRETE

Randy A. Carter, 15449 N. 25th Ave. #2076, Phoenix, Ariz. 85023

Filed Jan. 17, 1997, Appl. No. 785,058

Int. Cl.[6] **E04F** *19/02;21/02*

U.S. Cl. 52—371 **4 Claims**



1. A control joint for use in casting concrete sections on a generally horizontal supporting base at a work site, said control joint comprising:

(a) a base, said base defining spaced-apart holes therein;

(b) a web having opposite sides, said web extending upwardly from said base and integrally formed therewith from plastic by extrusion, said web having a lower section attached to said base, an intermediate transversely offset section and a top section generally aligned with said lower section, said web defining spaced-apart holes therein;

(c) said base having flanges extending oppositely from said lower section and said base being continuous, whereby said joint may be cut to length at the work site; and

(d) ground stakes insertable in said holes in said base, said stakes having a head and an elongated body defining a plurality of spaced-apart holes.

5,910,088

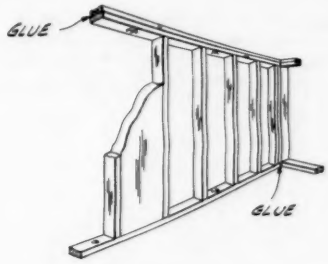
AIR INFILTRATION PREVENTION IN BUILDINGS

Lawrence L. Staples, Bridgeton, and Timothy O'Neil, Olivette, both of Mo., assignors to Aladdin Insulation & Roofing, Inc., Berkeley, Mich.

Provisional application No. 60/048,548, Jun. 4, 1997. This application Jun. 4, 1998, Appl. No. 90,361.

Int. Cl.[6] **F04B** *1/66*

U.S. Cl. 52—741.4 **9 Claims**



1. A method for reducing air infiltration in a building, the method comprising applying glue to a majority of abutting wooden surfaces in a building having a frame constructed from wooden frame components comprising said wooden surfaces to seal gaps between said wooden surfaces to block air flow between such surfaces, said applying of said glue being carried out after said frame, including trusses, floors, and exterior wall panels of the building are secured in place, and said glue having elastomeric properties allowing it to expand and contract as wooden surfaces to which it is applied expand and contract.

5,910,089

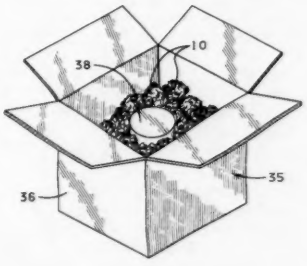
PACKAGING MATERIAL

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc.

Filed Jul. 23, 1997, Appl. No. 899,249

Int. Cl.[6] **B65B** *55/20*

U.S. Cl. 53—472 **3 Claims**



1. A method of packaging an article, comprising the steps of:

(a) positioning the article in a container;

(b) providing a sheet of material having a bonding material disposed on at least one surface thereof;

(c) crumpling the sheet of material into a substantially globular configuration such that the sheet of material has a plurality of random folds, a plurality of random engaged portions, and a plurality of voids and such that at least a portion of the engaged portions are bondably connected thereby increasing the resiliency of the folds;

(d) disposing the crumpled sheet of material into the container about the article; and

(e) repeat steps (b)–(d) until the article is substantially surrounded by the crumpled sheets of material to provide a protective cushion about the article.

5,910,090

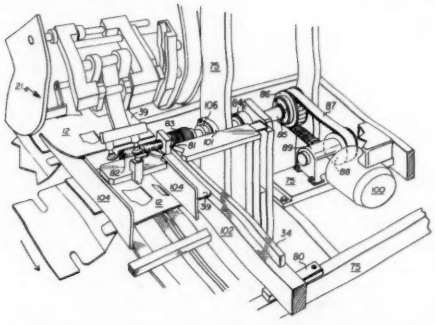
DC DRIVE POSITIONING SYSTEM

Carl J. Taute, Merrifield, Minn., assignor to Riverwood International Corporation

Continuation-in-part of application No. 08/866,286, May 30, 1997, abandoned, Provisional application No. 60/018,883, May 31, 1996, abandoned. This application Jun. 3, 1997, Appl. No. 868,204.

Int. Cl.[6] **B65B** *57/00;59/00*

U.S. Cl. 53—504 **23 Claims**



1. A DC drive powered apparatus for automatically positioning a movable guide on a packaging machine, comprising:

(a) at least one rail attached to said packaging machine;

(b) a guide slidably attached to said at least one rail;

(c) a rotatable lead screw attached to said machine and oriented parallel with said at least one rail;

(d) a nut fixedly attached to said guide and threadably engaged with said lead screw;

(e) an encoder mechanically coupled to said lead screw and electrically connected to a programmable logic controller to provide feedback to said programmable logic controller regarding rotation of said lead screw;

(f) a DC electric motor having an output shaft, said motor running in a forward or reverse direction;

(g) a DC drive electrically connected to said DC motor;

(h) a gearbox having a worm drive input, a worm gear, and an output shaft, said worm drive input being attached to said output shaft of said motor, said output shaft of said gearbox having reduced speed and increased torque relative to said output shaft of said motor;

(i) a mechanical coupling connecting said output shaft of said gearbox and said lead screw;

(j) an outward mechanical stop on said machine interacting with said nut and said lead screw to mechanically limit outward travel of said nut on said lead screw, said stop providing a home position of said guide for said programmable logic controller when said outward travel of said nut is limited by said stop;

(j) a programmable logic controller electrically connected to said encoder and to said DC drive, said programmable logic controller containing programming steps to direct said motor to run or stop to move said guide, said programming steps including at least one step which directs said motor to run or stop based on comparing a current position of said guide with a target position, said current position being calculated based on electrical signals from said encoder, said programming steps including at least one step which allows manual jogging of said guide by incrementally changing said target position, said programming steps including at least one step to define said home position for said guide, said programming steps including at least one step to take up mechanical backlash in said apparatus by overshooting of said target position by a predetermined amount when a move is made in an outward direction; and

(k) an operator interface electrically connected to said programmable logic controller, whereby said motor runs to turn said lead screw to cause said guide to slide on said at least one rail by commands from said programmable logic controller based on input from said encoder and said operator interface to position said guide along said at least one rail.

5,910,091

ELECTRIC LAWN MOWER

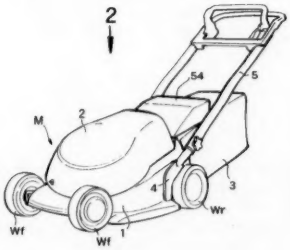
Tetsuo Iida; Kenzo Shimada, and Joji Maeda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1997, Appl. No. 931,412

Claims priority, application Japan, Sep. 17, 1996, 8-244754

Int. Cl.[6] **A01D** *67/00*

U.S. Cl. 56—16.7 ***4 Claims***



1. A walking-type electric lawn mower comprising:

(a) a cutter housing;

(b) a rotating grass cutter positioned on a lower face of said housing;

(c) an electric motor mounted on an upper face of said housing for rotating said cutter;

(d) a battery for supplying power to said electric motor, mounted on the upper face of said housing;

(e) a controller for controlling the operation of said electric motor, mounted on the upper face of said housing; and

(f) a housing cover pivotally mounted on and in contact with said housing for covering the upper face of said housing wherein a waterproof/dustproof space is formed between said housing and said housing cover, and wherein said electric motor, said battery, and said controller are positioned in said waterproof/dustproof space.

5,910,092

ROW CROP HEADER SHIELD WITH DETACHABLE SHIELDS

Kelvin E. Bennett, Geneseo, Ill., assignor to Case Corporation, Racine, Wis.

Filed Sep. 22, 1997, Appl. No. 935,305

Int. Cl.[6] **A01D** *45/02*

U.S. Cl. 56—119 **10 Claims**

1. A row crop header comprising:

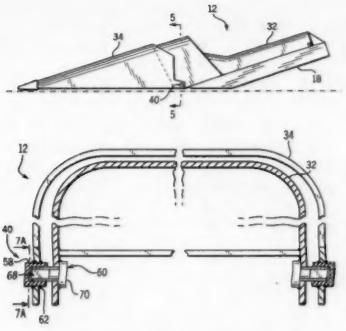
a frame;

a shield; and

a first hinge mechanism pivotally coupling the shield to the frame, the first hinge mechanism including:

a female coupling member coupled to a first one of the shield and the frame; and

a male coupling member coupled to a second one of the shield and the frame, wherein the male coupling member is



received within the female coupling member, wherein at least one of the male coupling member and the female coupling member are rotatable relative to one another to pivotally couple the shield to the frame about an axis, and wherein the male coupling member is removable from the female coupling member in a direction non-parallel to the axis upon selective rotation of at least one of the male and female coupling members relative to one another.

5,910,093

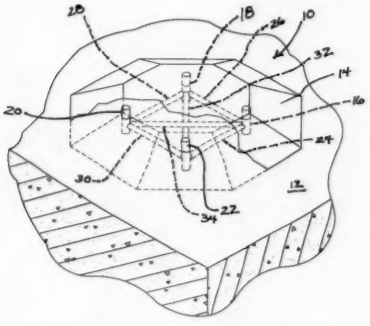
STARTER TUBE FOR USE IN VITRIFICATION PROCESS

William A. Sliger, 3506 W. Third, Kennewick, Wash. 99336

Division of application No. 08/363,259, Dec. 23, 1994, abandoned. This application Dec. 4, 1996, Appl. No. 759,176.

Int. Cl.[6] **B09C** *3/00*

U.S. Cl. 588—253 **2 Claims**



1. For use in a vitrification process, a method of creating an electrically conductive path between a pair of electrodes, the electrodes being at least partially surrounded by a material to be vitrified, the method comprising:

creating a trench in the material to be vitrified, the trench extending from one electrode to the other;

placing an elongated, electrically conductive, tubular member in the trench, the tubular member extending along substantially the length of the trench and having opposite ends respectively positioned adjacent the electrode at each end of the trench, the tubular member having an elongated, flexible tubular sheath made of a gas permeable fabric, and an electrically conductive material received within and substantially filling the sheath, the material being a loose graphite-glass frit mixture that cannot independently hold a defined shape such that the sheath retains the material and causes the material to define a continuous electrically conductive path;

creating an electrically conductive contact between the electrodes and the ends of the tubular member; and

covering the tubular member in the trench.

5,910,094

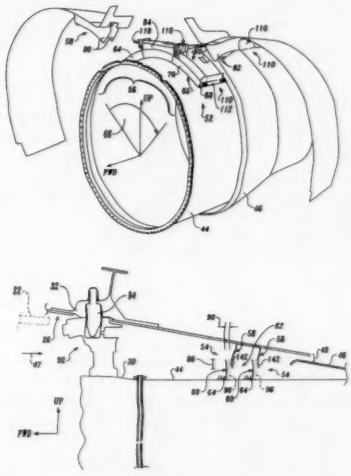
AIRCRAFT LABYRINTH FIRE SEAL

Kurt R. Kraft, Seattle; Gary L. Vieth, and Peter J. Louden, both of Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 10, 1996, Appl. No. 711,276

Int. Cl.[6] **F02K** *3/00*; **F02C** *7/25*

U.S. Cl. 60—39.091 **17 Claims**



1. A fire seal for an aircraft power generation system for discouraging the passage of flame between two regions, the aircraft power generation system having a first surface in opposed relation to a second surface, the fire seal comprising at least one mating plate pair formed between the first surface and the second surface and oriented in a manner transverse to an anticipated direction of flame travel, each mating plate pair comprising an upper plate row and a lower plate row, both rows being positioned between the first and second surface in a generally parallel-planar orientation, a portion of noncontacting overlap existing between the upper and lower plate rows; and further including a means for equalizing pressure between the area forward of the fire seal and the area aft of the fire seal.

7. A method of fire-sealing an aircraft propulsion system fire zone area comprising the steps of providing at least one mating plate pair having upper and lower plate rows connected to generally opposed surfaces in a propulsion system fire zone, the at least one mating plate pair for creating a labyrinth path through which flame has difficulty passing; and positioning the upper and lower plate rows near each other to form a gap therebetween and a portion of vertical overlap,

further comprising the step of providing endplates positioned at the lateral ends of the mating plate pairs, the endplates for adding additional corners to the labyrinth path.

5,910,095

FIBER REINFORCED CERAMIC MATRIX COMPOSITE MARINE ENGINE RISER ELBOW

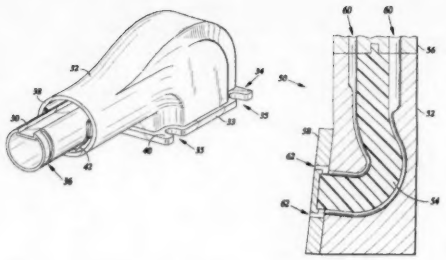
Thomas Edward Strasser, Corona, and Steven Donald Atmur, Riverside, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Feb. 21, 1997, Appl. No. 804,451

Int. Cl.[5] **F01N** *1/00*

U.S. Cl. 60—272 **31 Claims**

1. A corrosion-resistant, thermally insulative riser elbow for a marine engine, comprising an exhaust gas conduit having a generally uniformly fiber-reinforced single layer wall structure with a non-brittle interior surface and fabricated of fiber reinforced



ceramic matrix composite (FRMC) material formed from a polymer-derived ceramic resin in its ceramic form and fibers.

22. A method for forming a corrosion-resistant, thermally insulative riser elbow for a marine engine, comprising the step of:

forming an exhaust gas conduit comprising fiber reinforced ceramic matrix composite (FRCMC) material derived from a polymer-derived ceramic resin in its ceramic form and fibers generally directly adjacent each other.

5,910,096

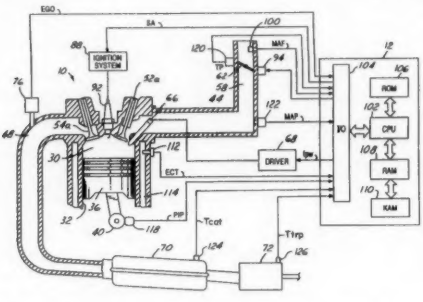
TEMPERATURE CONTROL SYSTEM FOR EMISSION DEVICE COUPLED TO DIRECT INJECTION ENGINES

Jeffrey Scott Hepburn, Dearborn, and Richard Eugene Baker, Dearborn Heights, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Dec. 22, 1997, Appl. No. 996,247

Int. Cl.[6] **F01N** *3/00*

U.S. Cl. 60—274 **8 Claims**



1. A control method for a spark ignited four stroke engine having multiple combustion chambers with fuel injected directly into each combustion chamber and at least one of the combustion chambers being coupled to an emission control device and the combustion chamber has a homogeneous mode of operation with a homogeneous mixture of air and fuel and a stratified mode of operation with a stratified mixture of air and fuel, comprising:

injecting fuel into the combustion chamber during a compression stroke to operate the combustion chamber in the stratified mode;

providing an indication of temperature of the emission control device;

indicating when said emission control device temperature is below a preselected temperature;

injecting additional fuel into the combustion chamber during an exhaust stroke while the combustion chamber is operating in the stratified mode to provide an exotherm for heating the emission device in response to said low temperature indication; and

switching from the stratified mode to the homogeneous mode and discontinuing said injection of additional fuel when total fuel injected into the combustion chamber exceeds a predetermined value.

5,910,097

INTERNAL COMBUSTION ENGINE EXHAUST EMISSION CONTROL SYSTEM WITH ADSORBERS FOR NITROGEN OXIDES

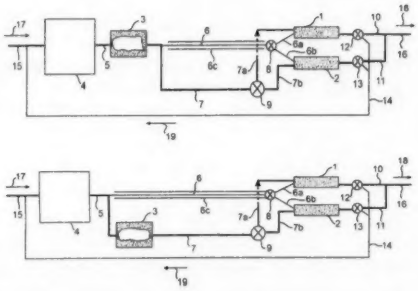
Walter Boegner, Remseck; Karl-Ernst Haak, Lichtenwald; Bernd Krutzsch, Denkendorf, all of Germany; Wim Verrelst, Edegem, Belgium; Dirk Voigtlaender, Korntal, Germany; Guenter Wenninger, Stuttgart, Germany, and Friedrich Wirbeleit, Esslingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Jul. 17, 1997, Appl. No. 895,900

Claims priority, application Germany, Jul. 17, 1996, 196 28 796

Int. Cl.[6] **F02M** *25/06*

U.S. Cl. 60—278 **12 Claims**



1. Exhaust emission control system for an internal combustion engine, comprising:

two adsorber parts arranged in parallel for alternate adsorption and desorption of nitrogen oxides contained in exhaust from an engine, and

means for conducting further downstream the exhaust emerging from one of the two adsorber parts currently operated in the adsorption mode and for recycling the exhaust emerging from the other of the two adsorber parts operating in the desorption mode, into an intake line of the engine,

an oxidizing converter located proximate the engine and upstream from the adsorber parts for oxidation of at least NO contained in the exhaust to NO_2, and

an exhaust line section located upstream of the adsorber parts divided into a main line branch and a partial line branch parallel to the main line branch, and at least one of shorter than the main line branch and thermally insulated to a greater degree, wherein the two adsorber parts are connected by control valves to the main line branch and the partial line branch such that the one adsorber part that is operating in the adsorption mode is fed by the exhaust stream from the main line branch and the other adsorber part that is operating in the desorption mode is supplied by the exhaust stream from the partial line branch.

8. The exhaust emission control system for an internal combustion engine, comprising

two adsorber parts arranged in parallel for alternate adsorption and desorption of nitrogen oxides contained in exhaust from the engine and

means for conducting further downstream, the exhaust emerging from one of the adsorber parts currently operating in the adsorption mode and for recycling the exhaust emerging from the other of the adsorber parts currently operating in the desorption mode into an intake line of the engine,

an oxidizing converter located proximate the engine and upstream from the adsorber parts for oxidation of at least NO contained in the exhaust to NO_2, and

the two adsorber parts comprised from a cylindrical adsorber body through which flow passes in a lengthwise direction of the cylindrical adsorber body, said body being divided into the two adsorber parts by at least one sector-dividing diaphragm located on at least the inlet side, with a relative rotary move-

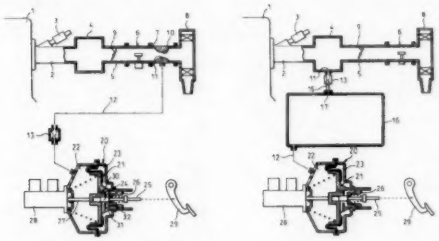
ment being provided around a rotational axis parallel to the flow direction between the sector-dividing diaphragm and the adsorber body.

5,910,098

BRAKE SYSTEM OF AN ENGINE

Kenji Harima, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 8, 1997, Appl. No. 947,258
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—397 **14 Claims**



1. An engine having an intake passage comprising:
detecting means arranged in the intake passage for detecting an amount of air fed into a cylinder of the engine;
and a brake booster operated by vacuum and connected to a vacuum takeout port which opens into a vacuum generating region of the intake passage wherein, the vacuum takeout port opens into the intake passage upstream of the detecting means.

10. An engine having an intake passage comprising:
detecting means arranged in the intake passage for detecting an amount of air fed into a cylinder of the engine;
a vacuum generating region formed in the intake passage;
a vacuum tank connected to said vacuum generating region;
a brake booster operated by vacuum and connected to said vacuum tank; and
means for judging whether a supply of fuel has been stopped during a deceleration operation of the engine, wherein said vacuum generating region and said vacuum tank are connected through an opening control valve, and said opening control valve is opened when the supply of fuel is stopped during the deceleration operation.

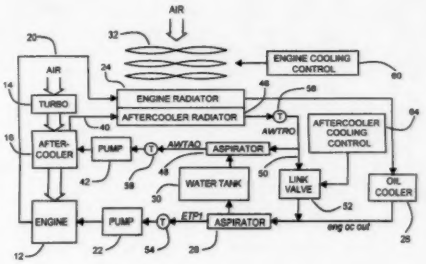
5,910,099

TURBOCHARGED ENGINE COOLING SYSTEM CONTROL WITH FUEL ECONOMY OPTIMIZATION

Lawrence Benard Jordan, Jr., Bolingbrook, and Teoman Uzkan, Indian Head Park, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Continuation of application No. 08/807,558, Feb. 28, 1997, abandoned. This application Oct. 10, 1997, Appl. No. 948,508.
Int. Cl.[6] F02B *29/04*
U.S. Cl. 60—599 **6 Claims**

1. A cooling system control for an internal combustion engine having coolant passages therethrough, a turbocharger for increasing the density of inlet air thereto, an aftercooler for cooling the inlet air from the turbocharger so as to increase engine power and a cooling system, the cooling system comprising an engine coolant loop having an engine pump, an engine radiator and an engine coolant conduit connecting the engine pump, the coolant passages of the engine and the engine radiator for circulation of liquid coolant, the cooling apparatus further comprising an aftercooler coolant loop comprising an aftercooler pump, an aftercooler radiator and an aftercooler coolant conduit connecting the aftercooler pump, the aftercooler and the aftercooler radiator for circulation of liquid coolant, the cooling apparatus further comprising a linking



conduit having a link valve therein connecting the engine and aftercooler coolant loops, the link valve maintaining separate coolant flows in the engine coolant loop and the aftercooler coolant loop while closed and permitting controlled mixing of the coolant flows in the engine coolant loop and the aftercooler coolant loop while open, the cooling apparatus further comprising a fan apparatus powered by the engine and providing variable cooling air flow through the engine and aftercooler radiators in a plurality of selectable, discrete cooling levels, the cooling control comprising:

an engine cooling control responsive to a coolant temperature in the engine coolant loop to operate the fan apparatus at a selected one of the plurality of selectable, discrete cooling levels in response to the temperature of coolant in the engine cooling loop and to derive and output a signal indicative of a desired level of cooling between the selected one and an adjacent one of the plurality of selectable, discrete cooling levels; and

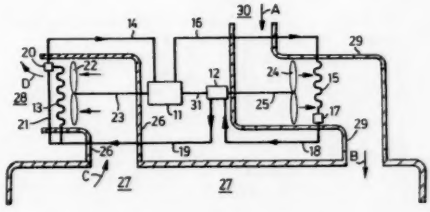
an aftercooler cooling control responsive to a coolant temperature in the aftercooler coolant loop and the signal output by the engine cooling control, when the signal indicates a desired increase in engine cooling, to determine whether the desired increase in engine cooling is more efficiently provided by stepping to the next one of the plurality of selectable, discrete cooling levels of the fan apparatus or by opening the link valve and to provide the desired increase in engine cooling by opening the link valve only in the latter case to vary the temperature of coolant in the engine cooling loop, by controlled mixing with coolant of lower temperature in the aftercooler coolant loop, so as to achieve the desired level of cooling indicated by the signal.

5,910,100

WASTE HEAT UTILIZATION

Frank C. Hooper, 5 King's College Road, Toronto, Ontario, Canada, M5S 1A4

Filed Nov. 20, 1996, Appl. No. 754,265
Int. Cl.[6] F01K *25/08*
U.S. Cl. 60—651 **19 Claims**



1. A process for extracting a first gas from a hot gaseous waste heat source, said first gas having a temperature above ambient temperature, said process comprising:

(i) causing condensed fluorocarbon working fluid to vaporize in an evaporator by extracting the first gas from the hot gaseous waste heat source and passing the first gas in contact with heat

transfer surfaces of the evaporator by a first fan, said first fan being driven by an engine;

(ii) allowing the fluorocarbon working fluid so-vaporized to enter the engine through an inlet port and exhaust through an exhaust port and thus operate the engine;

(iii) causing the exhausted fluorocarbon working fluid vapour to condense in a condenser by passing a second fluid, from a cold fluid source, in contact with heat transfer surfaces of the condenser by means of a second fluid transferring means, said second fluid transferring means being driven by the engine;

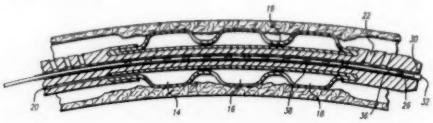
(iv) cause the condensed fluorocarbon working fluid to be transferred from the condenser to the evaporator by means of a feed pump which is driven by the engine.

5,910,101

DEVICE FOR LOADING AND CENTERING A VASCULAR RADIATION THERAPY SOURCE

Christopher C. Andrews, Murrieta, and Paul V. Neale, San Diego, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Aug. 29, 1996, Appl. No. 705,574
Int. Cl.[6] A61N *5/00*
U.S. Cl. 600—3 **18 Claims**



1. An intravascular catheter for maintaining the patency of a body lumen during delivery of radiation to the body lumen, the catheter comprising:

a catheter body having a proximal end and a distal end;

an inflation region disposed at the distal end of the catheter body, the inflation region having at least two lobes, the lobes adapted to contact the body lumen when inflated;

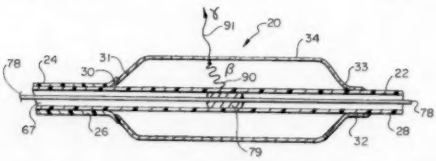
the catheter body further including a delivery lumen adapted to receive a guide wire for positioning the catheter body in the body lumen, the delivery lumen receiving an internal lumen after the guide wire is removed following the positioning of the catheter in the body lumen, the internal lumen adapted to receive a radiation source wire at the proximal end for advancement therein to the inflation region, whereby inflation of the lobes in the inflation region centers the radiation source wire within the body lumen.

5,910,102

CONVERSION OF BETA RADIATION TO GAMMA RADIATION FOR INTRAVASCULAR RADIATION THERAPY

Roger N. Hastings, Maple Grove, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Jan. 10, 1997, Appl. No. 781,857
Int. Cl.[6] A61N *5/00*
U.S. Cl. 600—3 **18 Claims**



1. An elongate intra-vascular device for emitting radiation comprising:

a first elongate shaft member having a distal region;

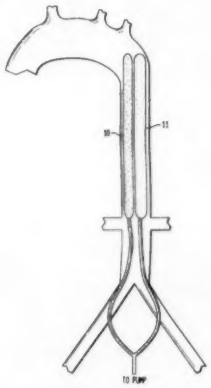
a heavy-metal envelope attached to said first shaft distal region and a Beta radiation source within said envelope.

5,910,103

DEVICE AND METHOD FOR AN IAB ASSIST WITH MULTIPLE BALLOONS

Lawrence Saper, New York, N.Y.; Stanton Rowe, Englewood, and Boris Leschinsky, Waldwick, both of N.J., assignors to Datascope Investment Corp., Montvale, N.J.

Filed Jun. 23, 1997, Appl. No. 880,625
Int. Cl.[6] A61M *1/12*
U.S. Cl. 600—18 **7 Claims**



1. An intra-aortic balloon catheter assembly for assisting a heart in pumping blood, the assembly comprising:

a. at least two separate non-connected catheters;

b. an intra-aortic balloon membrane connected to each of the at least two catheters; and

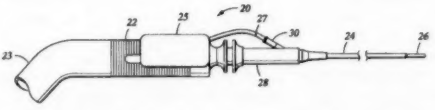
c. means for inflating and deflating the two separate, non-connected intra-aortic balloon membranes simultaneously in counterpulsation to the heart connected to the at least two catheters.

5,910,104

CRYOSURGICAL PROBE WITH DISPOSABLE SHEATH

John D. Dobak, III, Del Mar; Kambiz Ghaerzadeh, and Xiaoyu Yu, both of San Diego, all of Calif., assignors to CryoGen, Inc., San Diego, Calif.

Filed Dec. 26, 1996, Appl. No. 774,148
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—121 **53 Claims**



1. A disposable sheath for use as a removable sterile cover for a cryosurgical probe, said sheath comprising:

a hollow grip removably attachable over a handle portion of a cryosurgical probe;

a connector body attached to said hollow grip;

a tubular passageway through said connector body for receiving a cannula portion of a cryosurgical probe therethrough;

a thermally resistive catheter attached to said connector body, said catheter being removably disposable over a cannula portion of a cryosurgical probe; and

a thermally conductive segment attached to said catheter, said conductive segment being removably disposable over, and in thermal contact with, a heat transfer portion of a cryosurgical probe.

5,910,105

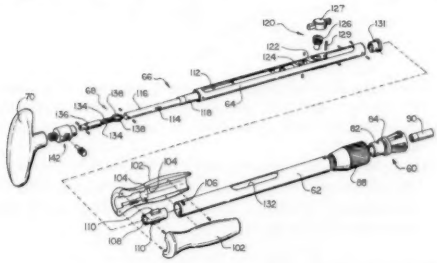
CONTROL HANDLE FOR AN ENDOSCOPE

Paul Swain, London, United Kingdom; Jeffrey Kapec, Westport, Conn.; Kazuna Tanaka, Cos Cob, Conn.; Feng Gong, London, United Kingdom; Geoffrey John Brown, London, United Kingdom; Gerry Ouellette, Framingham, Mass., and William M. Tennant, Jr., Nashua, N.H., assignors to C.R. Bard, Inc., Murray Hill, N.J., and University College London, London, United Kingdom

Filed Apr. 14, 1997, Appl. No. 843,229

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—131 **23 Claims**



1. A control device connectable to the proximal end of an endoscope for effecting sequential advancement of longitudinally movable members through a channel of an endoscope comprising:

an elongate frame;

a connector at the distal end of the frame for connection to an endoscope;

a first slide longitudinally movable with respect to the frame, the slide having a first connector for connection to a first longitudinally movable member;

a second slide longitudinally movable in unison with and relative to the first slide;

a second connector operatively associated with the second slide for connection to a second longitudinally movable member.

5,910,106

METHOD AND APPARATUS FOR HEATING A SURGICAL INSTRUMENT

Shanon Morgan, Azle; Michael W. Keith, Watauga; Kevin P. Nelms, Denton, and David Mills, Fort Worth, all of Tex., assignors to Fieldtech Avionics and Instruments, Inc., Fort Worth, Tex.

Filed May 15, 1998, Appl. No. 80,052

Int. Cl.[6] A61B *1/06*

U.S. Cl. 600—169 **17 Claims**

1. An instrument heater for heating an instrument comprising:

a sheath capable of surrounding the instrument, the sheath having:

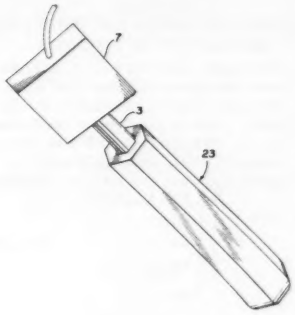
an inner wall forming a bore adapted for the instrument;

an outer wall forming a void between the inner wall and the outer wall;

a chemical solution filling the void between the outer wall and the inner wall; and

a first end forming an opening for receiving the instrument; and

an activator disk attached between the inner wall and the outer wall of the sheath, the activator disk having a substance, whereby the activator disk expels the substance when flexed causing an interaction of the substance with the chemical solution, the interaction of the substance and the chemical solution generating heat within the sheath.



5,910,107

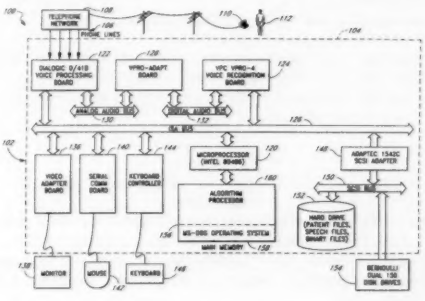
COMPUTERIZED MEDICAL DIAGNOSTIC AND TREATMENT ADVICE METHOD

Edwin C. Iliff, La Jolla, Calif., assignor to First Opinion Corporation, La Jolla, Calif.

Division of application No. 08/176,041, Dec. 29, 1993, Pat. No. 5,660,176. This application May 30, 1997, Appl. No. 866,881.

Int. Cl.[6] G06F *15/42*; **A61B** *5/02*

U.S. Cl. 600—300 **25 Claims**



1. A method of automating medical diagnosis and treatment advice, operating in a computer system, comprising:

providing a representation of connected nodes corresponding to a set of diagnostic steps for a selected medical problem;

providing a set of action lists associated with each node;

providing a script for each one of selected nodes, each script requesting information or providing medical advice;

translating the node representation into a node table and a plurality of list files;

processing the list files and a plurality of records in the node table to generate patient questions;

presenting the patient questions to a patient;

receiving answers from the patient; and

generating medical advice based on the answers to the patient questions and the diagnostic steps for a selected medical problem.

5,910,108

METHOD AND APPARATUS FOR IMPROVING THE DURABILITY OF A SENSOR

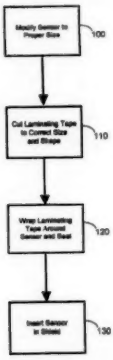
Stephen D. Solenberger, Glen Moore, Pa., assignor to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.

Continuation of application No. 08/505,975, Jul. 24, 1995, Pat. No. 5,673,693, which is a division of application No. 08/172,477, Dec. 23, 1993, Pat. No. 5,507,286. This application Aug. 19, 1997, Appl. No. 914,457.

This patent is subject to a terminal disclaimer

Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—310 **13 Claims**



1. A method for improving the durability of an otherwise disposable sensor, wherein said disposable sensor includes at least one light emitting diode and at least one photocell detector, and an attached first adhesive material, comprising the steps of:

a) modifying the sensor by removing said first adhesive material;

b) cutting a laminating material to the appropriate shape for its intended use;

c) laminating said sensor with said laminating material;

d) inserting said sensor into a sleeve;

e) cutting a second adhesive material to the appropriate shape for attachment to a subject's finger; and

f) coupling said second adhesive material to said sleeve and to said subject's finger.

5,910,109

NON-INVASIVE GLUCOSE MEASURING DEVICE AND METHOD FOR MEASURING BLOOD GLUCOSE

Richard K. Peters, and Donald Elmerick, both of Tallmadge, Ohio, assignors to Emerging Technology Systems, LLC, Akron, Ohio

Filed Feb. 20, 1997, Appl. No. 803,066

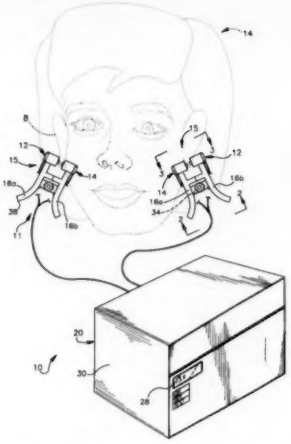
Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—316 **15 Claims**

1. A glucose measuring device for determining the concentration of glucose in fluid within a body part of a subject, comprising:

a) a first light source emitting near infrared or infrared light having a wavelength of between 650 and 1300 nm to illuminate the fluid, a second light source emitting near infrared or infrared light having a second wavelength of between 650 and 1300 nm to illuminate the fluid which is different from the wavelength of said first light source, and at least one receptor associated with said light sources for receiving light emitted by said light sources and transmitted through the fluid and body part of the subject and generating transmission signals representing the light transmitted from said first and second light sources;

b) a support piece having a first plate for supporting said light sources, and a second plate movable with respect to said first plate for supporting said receptor associated with said light sources;



c) said support piece adapted to place a body part of a subject intermediate said first and second plates and to alternately illuminate the body part and fluid using one of said light sources; and

d) a signal analyzer interconnected with said receptor for receiving said transmission signals and for determining from the transmission signals the glucose concentration in the fluid within the illuminated body part.

5,910,110

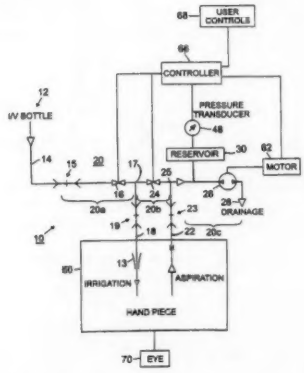
CONTROLLING PRESSURE IN THE EYE DURING SURGERY

David Bastable, Norwell, Mass., assignor to Mentor Ophthalmics, Inc., Norwell, Mass.

Filed Jun. 7, 1995, Appl. No. 472,884

Int. Cl.[6] A61B *3/16*

U.S. Cl. 600—398 **18 Claims**



1. Apparatus for use in eye surgery, comprising

a tube set through which fluid is supplied to and withdrawn from the eye, said tube set including a fluid reservoir having a diaphragm disposed thereon that deflects in response to a vacuum level in said reservoir,

a housing configured to receive said tube set, said housing including a door movable between an open position to allow said tube set to be installed in and removed from said housing and a closed position in which said tube set is retained in said housing, and

a sensor mounted on said housing for detecting deflections of said diaphragm,

wherein said housing further comprises a spring-biased plunger for urging said reservoir into a recess in said housing adjacent to said sensor when said door is in the closed position.

5,910,111

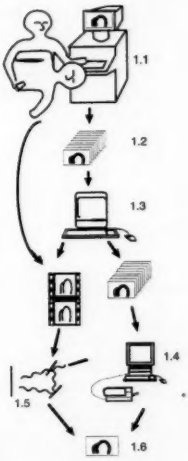
DISPLAY OF HEART MOTION

Patrick Hunziker, 79 Curtis St., Somerville, Mass. 02144

Filed Sep. 30, 1997, Appl. No. 941,150

Int. Cl.[6] A61B *5/05*

U.S. Cl. 600—407 **9 Claims**



1. A method for displaying a hologram of heart motion on a portable medium, comprising:

providing an image sequence from the beating heart;

integrating the heart motion sequence into an angularly multiplexed hologram so that one holographic parallax encodes heart motion: and

displaying the hologram of the heart on a portable medium.

5,910,112

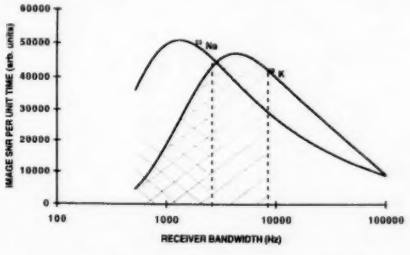
^{23}NA AND ^{39}K IMAGING OF THE HEART

Robert M. Judd, Wheeling, and Todd B. Parrish, Chicago, both of Ill., assignors to Northwestern University, Evanston, Ill.

Provisional application No. 60/030,638, Nov. 8, 1996. This application Apr. 11, 1997, Appl. No. 827,809.

Int. Cl.[6] A61B *5/055*

U.S. Cl. 600—410 **18 Claims**



1. A process of increasing the efficiency of ^{23}Na magnetic resonance imaging of biological tissue, the process including the step of acquiring ^{23}Na images using magnetic resonance imaging with a receiver bandwith equal to $R(N_{ro}/T^*_{2Na})$ where R is an integer from 1 to about 5 and N_{ro} is the number of readout samples.

5,910,113

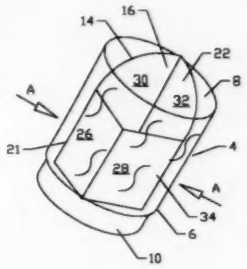
SHEATH FOR ULTRASOUND PROBE

Rick L. Pruter, 611 Southgate Ave., Iowa City, Iowa 52240-2166

Filed Mar. 24, 1998, Appl. No. 47,062

Int. Cl.[6] A61B *8/00*

U.S. Cl. 600—437 **10 Claims**



1. An elongate sheath for receiving an ultrasound transducer probe comprising

a tube of flexible polymeric material having an open end and an opposing closed end;

a polygonal body having open opposing ends;

one of said open ends of said polygonal body disposed at said open end of said tube;

said polygonal body disposed within said tube near the open end thereof;

said polygonal body constructed of relatively stiff material;

said polygonal body collapsible into a substantially planar object;

said polygonal body retained to said tube;

said tube telescopingly collapsed about said polygonal body.

5,910,114

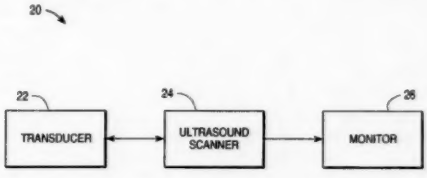
SYSTEM AND METHOD FOR CORRECTING THE GEOMETRY OF ULTRASONIC IMAGES ACQUIRED WITH A MOVING TRANSDUCER

Levin F. Nock, Bellevue; Barry Friemel; Patrick L. Sutcliffe, both of Redmond; Arun P. Tirumalai, and Lee Weng, both of Issaquah, all of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Sep. 30, 1998, Appl. No. 164,211

Int. Cl.[6] A61B *8/00*

U.S. Cl. 600—437 **24 Claims**



1. A method for correcting the geometry of an ultrasound image acquired with a moving transducer that acoustically scans a target for display in a frame on a monitor, the transducer having a probe motion direction, a probe speed, an acoustic beam scan direction and an acoustic beam scanning speed the method comprising:

multiplying a width of the target scanned while the transducer is stationary by a ratio of an acoustic beam scanning speed relative to the target while the transducer is moving to an acoustic beam scanning speed while the transducer is stationary to determine a width of the target scanned while the transducer is moving; and

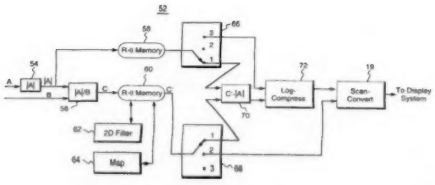
indicating the correct geometry of the image acquired while the transducer is moving by using the width of the target scanned while the transducer is moving.

5,910,115

METHOD AND APPARATUS FOR COHERENCE FILTERING OF ULTRASOUND IMAGES

Kenneth Wayne Rigby, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 22, 1997, Appl. No. 934,692
Int. Cl.[6] A61B *8/00*
U.S. Cl. 600—443 **16 Claims**



1. A system for imaging ultrasound scatterers, comprising:

an ultrasound transducer array for transmitting ultrasound beams and detecting ultrasound echoes reflected by said ultrasound scatterers, said transducer array comprising a multiplicity of transducer elements;

transmitter means coupled to said transducer array for forming a transmit beam for each one of a multiplicity of sample volumes;

receiver means comprising a multiplicity of receive channels for receiving respective amplitude signals from said multiplicity of transducer elements;

means for forming an incoherent sum of the received amplitude signals derived from ultrasound echoes reflected by a single sample volume, a respective incoherent sum being formed for each of said multiplicity of sample volumes;

means for displaying an image comprised of pixels wherein the intensity of each pixel is a function of the incoherent sum formed for the corresponding one of said multiplicity of sample volumes;

means for forming a coherent sum of the received amplitude signals derived from ultrasound echoes reflected by a single sample volume, a respective coherent sum being formed for each of said multiplicity of sample volumes; and

means for forming a ratio for each of said multiplicity of sample volumes, wherein said ratio equals the absolute value of the coherent sum for a respective sample volume divided by the incoherent sum for said respective sample volume.

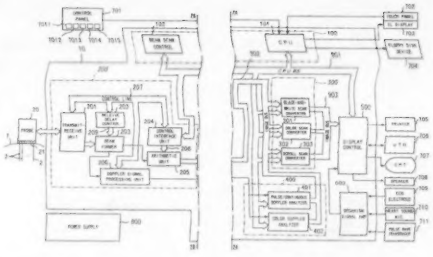
5,910,116

ULTRASONIC DIAGNOSTIC APPARATUS THAT REGENERATES IMAGE SIGNALS ACCORDING TO A NON-INTERLACE SCHEME

Yuichiro Ishii, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 19, 1998, Appl. No. 100,321
Claims priority, application Japan, Jan. 30, 1998, 10-019749
Int. Cl.[6] A61B *8/00*
U.S. Cl. 600—443 **10 Claims**

1. An ultrasonic diagnostic apparatus comprising:



an ultrasonic transmit-receive unit for repeating a process that ultrasonic waves are transmitted into a subject, and the ultrasonic waves reflected within the subject are received to obtain received signals;

an image generating unit for sequentially generating a plurality of frames of image signals according to a non-interlace scheme in accordance with the received signals obtained in said ultrasonic transmit-receive unit;

an image signal transformation unit for transforming the image signals according to the non-interlace scheme sequentially generated in said image generating unit into image signals according to an interlace scheme;

a recording unit for recording the image signals according to the interlace scheme obtained in said image signal transformation unit;

an image regenerating unit for regenerating image signals according to the non-interlace scheme using only either one of image signals representative of images on odd number lines and images on even number lines, which constitute the image signals according to the interlace scheme read from said recording unit; and

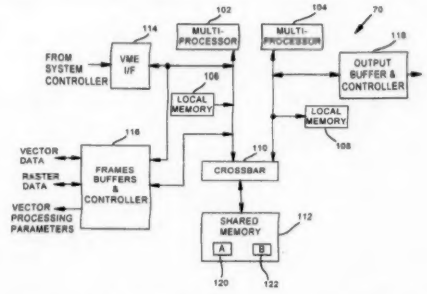
an image display unit according to the non-interlace scheme for displaying images based on the image signals generated in said image generating unit and images based on the image signals regenerated in said image regenerating unit.

5,910,117

REAL TIME COLOR DOPPLER ULTRASOUND IMAGING

Christopher H. Basoglu, 21832—2nd Ave. W., Bothell, Wash. 98021, and Yongmin Kim, 4431 NE. 189th Pl., Seattle, Wash. 98195

Provisional application No. 60/038,666, Feb. 20, 1997. This application Feb. 18, 1998, Appl. No. 27,112.
Int. Cl.[6] A61B *8/00*
U.S. Cl. 600—454 **5 Claims**



1. A method for deriving ultrasound image data, comprising the steps of:

defining an active region of an image plane where flow velocity is of interest;

receiving gray-scale tissue values for each pixel of the image plane;

for each one pixel of the image plane outside the active region, using the gray-scale tissue value to define said corresponding one pixel;

testing each gray-scale tissue value for each pixel in the active region to determine whether the gray-scale value is in excess of a given threshold;

for each tested gray-scale tissue value which does exceed the threshold, using the tested gray-scale tissue value to derive a corresponding output pixel; and

for each tested gray-scale tissue value which does not exceed the threshold, deriving a flow velocity value and using the derived flow velocity value to derive the corresponding output pixel; and

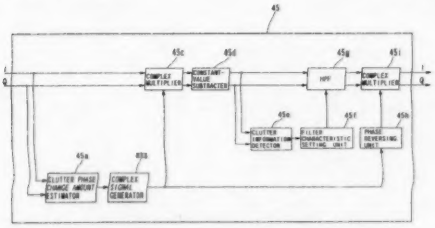
wherein a flow velocity value is not derived for each tested gray-scale tissue value which does exceed the threshold and for each pixel of the image plane outside the active region.

5,910,118

REMOVAL OF CLUTTER COMPONENTS IN ULTRASOUND COLOR-DOPPLER IMAGING

Ryoichi Kanda, and Eiichi Shiki, both of Otawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 1, 1997, Appl. No. 942,329
Claims priority, application Japan, Oct. 1, 1996, 8-260805
Int. Cl.[6] A61B *8/06*
U.S. Cl. 600—455 **19 Claims**



1. A diagnostic ultrasound color-Doppler apparatus comprising:

transmitting/receiving means for transmitting an ultrasound signal a plurality of times in each scanning direction in a cross section to be imaged of an object and receiving an ultrasound echo reflected from the cross section of the object;

means for detecting a Doppler signal from a group of echo signals made up of the ultrasound echo received at each time of the plurality of times of the transmission, the Doppler signal consisting of a train of sequential Doppler data resulting from each spatial sample position in each scanning direction;

means for estimating an amount of instantaneous change in a phase of a clutter component included in the Doppler signal, the clutter component occurring due to reflection of the ultrasound signal from an organ existing in the cross section;

means for correcting a phase of the Doppler signal using the estimated amount of instantaneous change in the phase:

means for extracting information representing blood flow passing the cross section based on the Doppler signal of which clutter component is corrected by correcting means; and

means for displaying the extracted information.

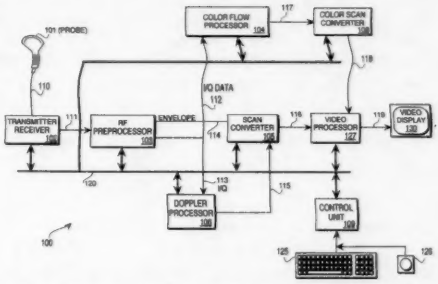
5,910,119

ULTRASONIC COLOR DOPPLER VELOCITY AND DIRECTION IMAGING

Gregory Sharat Lin, Fremont, Calif., assignor to Diasonics, Inc., Milpitas, Calif.

Filed May 12, 1998, Appl. No. 76,669
Int. Cl.[6] A61B *08/00*
U.S. Cl. 600—455 **26 Claims**

1. An ultrasonic imaging apparatus comprising:



a transducer operable to transmit into a first area, a first set of ultrasound beams at a first angle and a second set of ultrasound beams at a second angle, and to receive from said first area, reflected ultrasound beams at said first angle and said second angle;

a beamformer coupled to said transducer and operable to sequence a plurality of beams of said first set of ultrasound beams with a plurality of beams of said second set of ultrasound beams, such that successive ultrasound beams alternate between said first angle and said second angle; and

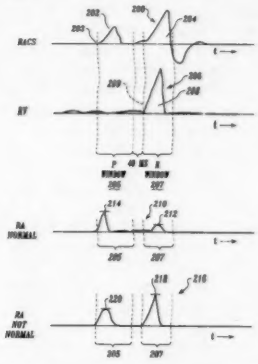
a signal processor coupled to said beamformer and operable to estimate a first frequency shift of an object in said first area using an ultrasound beam of said first set of ultrasound beams, and to estimate a second frequency shift of said object using an ultrasound beam of said second set of ultrasound beams.

5,910,120

METHOD AND SYSTEM FOR DETECTING DISLODGMENT OF AN IMPLANTED RIGHT ATRIAL ENDOCARDIAL LEAD

Jaeho Kim, Redmond, and Phillip D. Foshee, Jr., Woodinville, both of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Jun. 23, 1998, Appl. No. 102,844
Int. Cl.[6] A61B *5/0452*
U.S. Cl. 600—509 **14 Claims**



14. A system for detecting dislodgment of an implanted right atrial endocardial lead having at least one electrode, the system *comprising:*

means including a first electrode for sensing atrial activity of the heart within the right atrium of the heart;

means including a second electrode for sensing ventricular activity of the heart within the right ventricle of the heart;

means for establishing a first sensing period responsive to the atrial activity sensed with the means including a first electrode;

means for establishing a second sensing period responsive to the ventricular activity sensed with the means including a second electrode;

means for sensing activity of the heart with the at least one electrode of the implanted endocardial lead during the first sensing period and the second sensing period; and

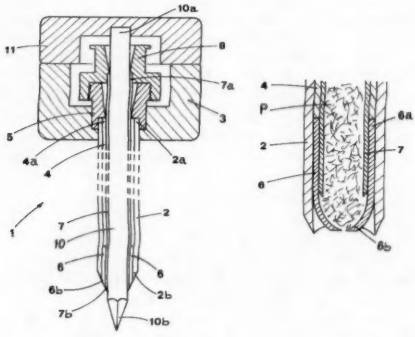
means for comparing the heart activity sensed with the at least one electrode during the first sensing period to the heart activity sensed with the at least one electrode during the second sensing period to detect dislodgement of the right atrial endocardial lead.

5,910,121

BIOPSY DEVICE

Avaltroni Paolo, Mantova, and Casula Gianfranco, Milan, both of Italy, assignors to Gallini S.r.l., Mirandola, Italy

Filed Jan. 2, 1998, Appl. No. 2,500
Claims priority, application Italy, Jan. 3, 1997, BO97A0001
Int. Cl.[6] A61B *10/00*
U.S. Cl. 600—562 **10 Claims**



1. A biopsy device including:

a cylindrical outer cannula with a proximal end and a distal end;

a cutting rim made at said outer cannula distal end for facilitating penetration into tissue;

a handle fixed to said outer cannula proximal end;

an intermediate cannula coaxially disposed inside said outer cannula, said intermediate cannula having a proximal end and a distal end, said intermediate cannula and said outer cannula being joined to each other in the region of said outer cannula proximal end and said intermediate cannula proximal end;

elastic resection means for surgically removing a bioptic sample associated with said intermediate cannula distal end, having at least one distal free end;

an inner cannula, of a diameter smaller than said intermediate cannula, slidably located inside said intermediate cannula to control the position of said resection means, said inner cannula having a proximal end and a distal end;

and inner cannula support means for supporting said inner cannula and providing axial movement of said inner cannula with respect to said intermediate cannula and said outer cannula, fixed to said inner cannula proximal end, so that said inner cannula can be moved between an advanced position in which said inner cannula distal end protudes from said intermediate cannula distal end, and a retracted position in which said inner cannula distal end is withdrawn to a position proximal of said intermediate cannula distal end;

wherein said at least one free end of said resection means is released and elastically bent inward to cut and capture a bioptic sample when said inner cannula is moved from said advanced position to said retracted position;

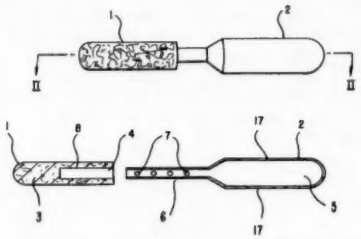
and wherein said inner cannula pushes said resection means when at said advanced position so that said resection means are kept open in a cylindrical configuration in order to receive a bioptic sample.

5,910,122

SALIVA COLLECTOR WITH AN ASPIRATING PIPETTE

Joseph P. D'Angelo, Miami, Fla., assignor to Americare Health Scan Inc., Miami, Fla.

Provisional application No. 60/017,835, Jun. 4, 1996. This application Jun. 4, 1997, Appl. No. 869,098.
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—573 **13 Claims**



1. An assembly for collecting saliva for body fluid analysis, comprising:

an absorptive saliva collector to be placed into a patient's oral cavity for absorbing saliva therein, said absorptive saliva collector having a recess formed therein;

a collection pipette contiguous with and fluidically connected to said absorptive saliva collector, said collection pipette having elastically resilient walls adapted to collapse towards one another upon being squeezed and, upon expanding, driving the saliva from said absorptive saliva collector into said collection pipette; and

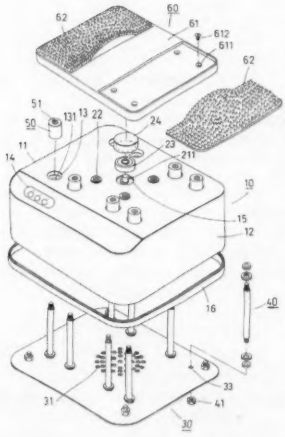
a filter member residing in said recess of said absorptive saliva collector for filtering particulate matter.

5,910,123

FOOT SOLE MASSAGING DEVICE

Yuh-Yun Wang, No. 6, Tung-Shi Lane, Jong-Shan Village, Waipu Shiang, Taichung, Taiwan

Filed May 27, 1997, Appl. No. 863,302
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—50 **8 Claims**



1. A foot sole massaging device comprising:

a housing having a top plate and a side frame extending from edges of said top plate such that a receiving space is formed and defined by said top plate and said side frame;

a driving device located in said receiving space of said housing and composed of a motor having an axle, said axle having an eccentric portion;

a bottom plate fastened to an open bottom of said housing;

a vibration device fastened pivotally with said driving device and composed of a vibration plate provided thereon with two knobbed solerests spaced from each other on opposite sides of the vibration plate; and

at least four elastic elements fastened respectively at a top end thereof to four corners of said vibration plate;

wherein said top plate of said housing is provided with a plurality of recesses corresponding in location and number to said elastic elements, said recesses provided respectively at the center of a bottom wall thereof with a vent hole;

wherein said motor is fastened to the underside of said top plate of said housing such that said eccentric portion of said axle of said motor is extended through said top plate via a center hole of said top plate;

wherein said bottom plate is provided with a plurality of through holes corresponding in location to said vent holes of said recesses;

wherein said top plate and said bottom plate are provided therebetween with at least four rod members which are fastened respectively at a top end thereof with one of said elastic elements via one of said vent holes of said recesses such that a bottom end of each of said rod members is engaged with a nut via one of said through holes of said bottom plate.

5,910,124

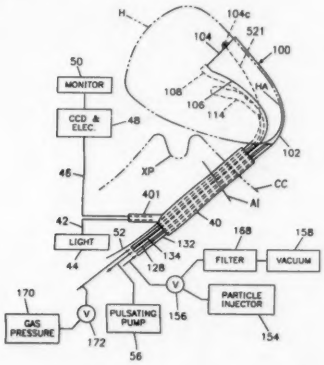
VENTRICULAR ASSIST DEVICE AND METHOD

Leo Rubin, Suffern, N.Y., assignor to Cardiassist Incorporated, Suffern, N.Y.

Continuation-in-part of application No. 08/652,522, filed as application No. PCT/US95/0019950109, Jan. 9, 1995, Pat. No. 5,707,336, which is a continuation-in-part of application No. 08/179,153, Jan. 10, 1994, abandoned. This application Jan. 8, 1998, Appl. No. 4,435.

Int. Cl.[6] A61H *7/00;19/00*

U.S. Cl. 601—153 **15 Claims**



1. Cardiac ventricular assist apparatus adapted to be placed between the pericardium and the heart by insertion through an incision in the wall of the upper abdomen below the rib cage and an incision in the inferior aspect of the pericardium proximate to the heart apex comprising

a bladder assembly having walls of flexible material, the bladder assembly being of a size and shape adapted to be engageable exclusively with a substantial portion of the outer surface of the left ventricle of a heart and having a distal edge of a length adapted to extend around the heart proximate to the atrio-ventricular groove through an angle of from about 180 degrees to about 270 degrees from one end near the pulmonary artery to another end near the inferior vena cava and the bladder assembly being adapted to be passed in a collapsed condition through the incision in the pericardium to a position between the pericardial sac and the epicardium, the bladder assembly having

a first bladder having an inner wall engageable with the heart;

a second bladder attached to and substantially coextensive with the first bladder;

at least one wall of the second bladder being substantially non-extensible so as to provide dimensional stability to the bladder assembly circumferentially and axially of the heart;

a tube attached to the first bladder through which a gas can be introduced into and withdrawn from the first bladder so as to apply pumping assistance to the left ventricle; and

a tube attached to the second bladder through which fluid material can be introduced into the second bladder to render the second bladder substantially rigid.

5,910,125

COMPOSITE WOUND DRESSING WITH SEPARABLE COMPONENTS

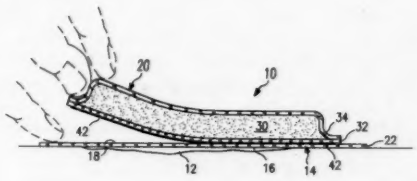
Gary Wayne Cummings, and Robert Cummings, both of P.O. Box 832616, Richardson, Tex. 75083

Continuation of application No. 07/780,619, Oct. 23, 1991, abandoned. This application Jul. 1, 1993, Appl. No. 88,625.

This patent is subject to a terminal disclaimer

Int. Cl.[6] A61F *13/00;15/00*

U.S. Cl. 602—58 **59 Claims**



1. A composite dressing applicable to a wound, comprising:

(a) a contact component constructed of a continuous sheet that covers all portions of the wound over which the contact component is applied, said contact component being pliable and suitable for conforming contact with the surface of the wound such that when the contact component is placed on the wound, the entire surface of the wound beneath the contact component can be comformingly contacted by a bottom side of the contact component, an entire extent of the bottom surface of said contact component being substantially free from adhesives and thus non-adherent to the wound, said contact component also having a top side, and said contact component being constructed of a liquid permeable material to allow permeation of liquids therethrough with respect to the wound; and

(b) a dressing component adapted for use in treating the wound, said dressing component and said contact component being releasably attached directly to each other such that they can be applied to the wound together in one step and such that, when the bottom side of said contact component is placed in substantially conforming contact with the wound, said contact component is entirely interposed between the surface of the wound underneath the contact component and said dressing component such that liquid can pass between the wound and the dressing component by permeation through said contact component, and said dressing component being releasably attached directly to said contact component such that said dressing component can be readily separated from said contact component when said contact component is in substantially conforming contact with the wound if said dressing component is pulled while said contact component is retained in place on the wound.

· 5,910,126

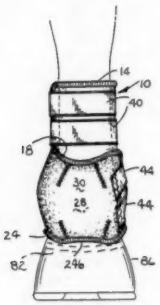
PROTECTIVE SUPPORT WRAP FOR EQUINE LIMB

Robby W. Wilson, Stephenville; Bryan Kenneth Bray, Granbury, and Paul O. Sullivan, Stephenville, all of Tex., assignors to Equibrand Corporation, Granbury, Tex.

Filed Aug. 27, 1997, Appl. No. 924,489

Int. Cl.[6] A61F *13/00;15/00;* **A01K** *13/00*

U.S. Cl. 602—75 **21 Claims**



1. A protective support wrap for a lower leg of a horse comprising:

a flexible panel formed of a first layer of substantially flexible shock absorbing material having a top edge, a bottom edge and spaced apart side edges, said panel including a portion forming a first pocket generally adjacent said bottom edge and a portion of said panel forming a second pocket spaced from said first pocket sufficiently such that, upon wrapping said panel around a lower leg of a horse adjacent a fetlock joint of the lower leg, said first pocket covers the fetlock joint and said second pocket is engaged with said first pocket in nesting relationship whereby the fetlock joint by during use at said first pocket and said second pocket to provide two thicknesses of said first layer covering the fetlock joint to protect and support the fetlock joint.

5,910,127

ON-SITE EMERGENCY TREATMENT OF INJURED OR UNCONSCIOUS PATIENTS, USING FRUCTOSE-1,6-DIPHOSPHATE (FDP)

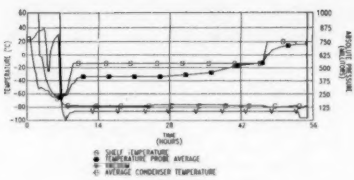
Paul J. Marangos, Encinitas; Anthony W. Fox, Rancho LaCosta, and Brian W. Sullivan, Escondido, all of Calif., assignors to Cypros Pharmaceutical Corp., Carlsbad, Calif.

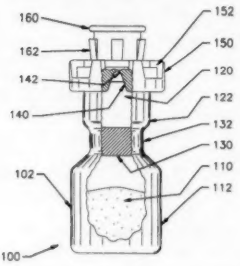
Continuation-in-part of application No. 08/646,600, May 8, 1996. This application Jan. 4, 1998, Appl. No. 2,578.

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—49 **15 Claims**

1. A method for emergency treatment of a patient who is suffering from a life-threatening medical crisis, comprising the step of intravenously injecting into the patient, as quickly as possible and without waiting to obtain a medical diagnosis of the patient by a physician, fructose-1,6-diphosphate or a salt thereof, in a dosage





which is therapeutically effective in reducing ischemic damage to at least one internal organ in a patient at risk of such damage.

5,910,128

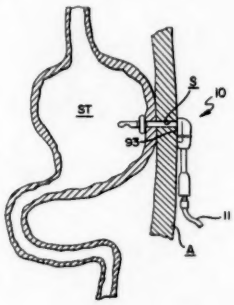
RETENTION BALLOON AND CORPOREAL ACCESS TUBE ASSEMBLY

David G. Quinn, Grayslake, Ill., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Division of application No. 08/734,630, Oct. 18, 1996, Pat. No. 5,860,952, which is a continuation-in-part of application No. 08/583,930, Jan. 11, 1996, abandoned. This application May 1, 1997, Appl. No. 847,116.

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—93 **15 Claims**



1. A corporeal access tube assembly, comprising:

a) a tube segment having an outer surface; and

b) a retention balloon mounted on said tube segment and being preformed so as to extend radially outwardly from said tube segment;

c) said preformed retention balloon including a generally tire-shaped casing having opposed side walls extending generally parallel to each other and annular, inner beads;

d) each of said side walls being fastened to said outer surface of said tube segment at a corresponding inner bead;

e) one of said side walls having a retaining surface which is substantially perpendicular to said tube segment and relatively flat for a predetermined distance outwardly from a corresponding bead when said balloon is in said preformed configuration;

f) said balloon containing a gas under substantially ambient pressure which supports the balloon in said preformed con-

figuration whereby it is effective to prevent withdrawal of the tube segment from a stoma when in its preformed configuration.

5,910,129

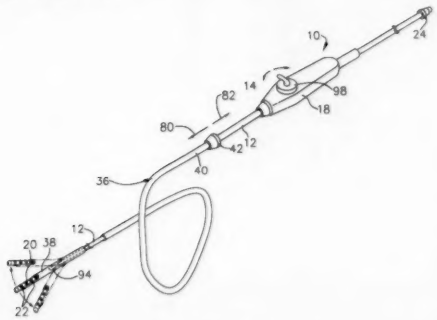
CATHETER DISTAL ASSEMBLY WITH PULL WIRES

Josef V. Koblish, Sunnyvale, and Sidney D. Fleischman, Menlo Park, both of Calif., assignors to EP Technologies, Inc., San Jose, Calif.

Continuation-in-part of application No. 08/769,856, Dec. 19, 1996. This application Oct. 30, 1997, Appl. No. 960,850.

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—95 **18 Claims**



1. A probe assembly, comprising:

an outer member including a wall defining an interior bore having a distal end and a proximal end;

an elongate body, defining a distal portion, a distal end, a proximal end and an exterior, carried within the outer member, the distal portion of the elongate body including at least one operative element, the elongate body further including a flexible spline extending from adjacent the distal end toward the proximal end, the flexible spline defining longitudinal ends, a substantially non-flat cross-sectional shape over a substantial portion thereof and a substantially flat cross-sectional shape over a relatively small portion thereof; and

a control element defining a distal portion operably connected to at least one of the distal end and distal portion of the elongate body, and a proximal portion extending along the exterior of the elongate body within the outer member toward the proximal end of the outer member.

5,910,130

SHIELD AND ACTUATOR FOR NEEDLES

Richard J. Caizza, Barry Lakes, N.J., and Bronwen Walters, Dania, Fla., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of application No. 08/721,512, Sep. 26, 1996, Pat. No. 5,738,665. This application Sep. 25, 1997, Appl. No. 937,727.

This patent is subject to a terminal disclaimer

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 **9 Claims**

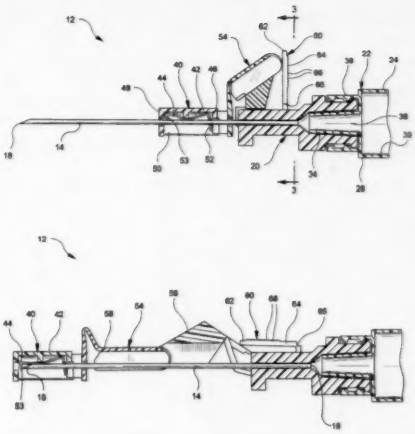
1. A shieldable needle assembly comprising:

a needle having proximal and distal ends;

a hub securely mounted around said proximal end of said needle;

a needle guard slidably mounted on said needle and movable from a proximal position where said distal end of said needle is exposed to a distal position where said needle guard guards said distal end of said needle;

a hinged arm articulated to said hub and to said needle guard and being movable from said collapsed condition where said needle guard is in said proximal position to an extended condition where a needle guard is in said distal position on said needle;



a trigger articulated to said hub at a location proximally of said hinged arm, said trigger including a cam surface spaced from said hub and slidably engaged with said hinged arm such that articulation of said trigger toward said hinged arm urges said hinged arm into said extended condition and said needle guard into said distal position on said needle; and

means for locking said needle guard in said distal position.

5,910,131

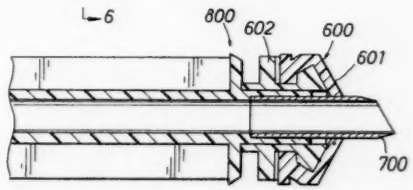
NON-REUSABLE RETRACTABLE SAFETY SYRINGE

R. Kern McGary, 5802 #B Cougar Dr., Austin, Tex. 78745-3814, and S. William Jentzen, 3000 Artesian Dr., Cedar Creek, Tex. 78612

Continuation of application No. 08/713,526, Sep. 13, 1996. This application Mar. 10, 1998, Appl. No. 41,085.

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 **6 Claims**



1. A non-reusable retractable safety syringe comprising:

(a) a cylindrical barrel having first and second barrel ends and an inside diameter wall there between;

(b) a chamber for receipt of fluid within said barrel and between said first and second barrel ends;

(c) a plastic hollow plunger having a distal end, said plunger being extendable into said barrel through the first end of said barrel, and selectively movable from expanded position toward an expended position;

(d) a hollow needle in secured relationship relative to the second end of the barrel;

(e) biasing means in initially secured relationship relative to the second end of the barrel for biasing the needle toward the hollow plunger;

(f) means for directing forward pressure upon said plunger;

(g) sealing means including an elastomeric sealing member engaged to one end of the plunger for slidable sealing engagement with the inside diameter wall of the barrel; and

(h) means for telescopically engaging the plunger distal end to the sealing means and including a series of radially spaced breakable support struts having an external diameter and disposed around and to the distal end of the plunger, the sealing means including a tubular housing having an internal diameter larger than the external diameter of the support struts, whereby the support struts selectively secure the plunger to the sealing means, and upon forward pressure being applied to the plunger sufficient to break the struts, the plunger may thereafter telescopically move within the external diameter of the tubular housing from the expended position to the collapsed position.

5,910,132

SAFETY IV CATHETER GUARD

Willard F. Schultz, Bethlehem, Pa., assignor to B. Braun Medical Inc., Allentown, Pa.

Filed Jan. 6, 1998, Appl. No. 3,299

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—162 **17 Claims**

1. A catheter comprising a needle, a needle hub affixed to one end of said needle, a catheter hub, a needle guard intermediate and releasably secured to said needle hub and said catheter hub, said needle guard comprising locking means having an opening for freely receiving the shaft of said needle when said catheter is in a ready condition, said needle hub being movable axially away from said needle guard to an activated position in which the tip of said needle is received within said needle guard, and actuating means in engagement with said locking means, said needle hub including means for operatively engaging said actuating means when said needle hub is moved to its activated position, thereby to cause said actuating means to move said locking means to a locking position in which it contacts the shaft of said needle at said opening, thereby to restrict further axial movement of said needle, said actuating means including lost motion means extending between said locking means and said needle hub and capable of relative displacement with respect to said needle hub as the latter is moved toward its said activated position, said lost motion means comprising an actuator having an upper end engaging said needle guard when the latter is in its ready position, said locking means further including a lock plate having a second opening radially spaced from said first opening for receiving the upper end of said actuator.

5,910,133

TRANSINTIMAL RECANALISATION DEVICE

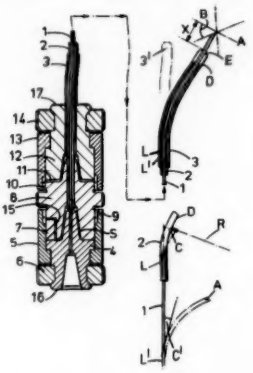
Derek Alan Gould, 52 Dunbabin Road, Liverpool, L16 7QH, United Kingdom

PCT No. PCT/GB94/00781, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO94/23785, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 13, 1994, Appl. No. 532,700

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—164 **7 Claims**



1. A transintimal recanalisation device comprising:

a guide tube having a bend in its length, a flexible hollow needle having a bevelled end and located in said tube, wherein said needle is movable from a covered position wherein said bevelled end is within the tube to an uncovered position in which said bevelled end is exposed and has a bend in its length which conforms with the bend in the tube thereby enabling said bevelled end to adopt a desired orientation with respect to the tube;

means for manoeuvering the needle with respect to the tube, said manoeuvering means including a first body connected to an end of said needle spaced from the bevelled end, said first body having a first aperture therethrough in communication with said needle;

a second body connected to an end of said tube wherein said second body is provided with a first aperture therethrough to allow the passage of said needle;

wherein said first or second body has a second aperture extending from said first aperture to a surface of the body; and

wherein said first and second bodies are provided with cooperating alignment means whereby cooperation of said means results in the bevelled end of the needle adopting a desired orientation, said alignment means including a cooperating protrusion and recess; and

said first and second bodies further including means for indicating the relative position of the bevelled end of the needle with respect to an end of said tube spaced from said second body; and,

wherein said indicating means is provided by the cooperation of a protrusion with one of at least two spaced apart apertures.

5,910,134

DEVICE FOR DILATING A PUNCTURE HOLE IN A BODY AND FOR GUIDING THE INSERTION OF AN ELONGATED MEMBER INTO THE BODY

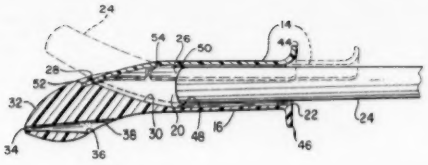
Arie Fussman, 2 Manitou Falls Terrace, Sparta, N.J. 07871

Continuation-in-part of application No. 08/811,497, Mar. 5, 1997, Pat. No. 5,713,868. This application Dec. 2, 1997, Appl. No. 982,749.

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—164 **15 Claims**

1. A device in the form of a unitary dilator member comprising:



an elongated body portion with an outer wall defining a substantially uniform first lumen adapted for receiving a catheter or the like therein, the body portion having an elongated opening longitudinally disposed in said outer wall and communicating with said first lumen; and

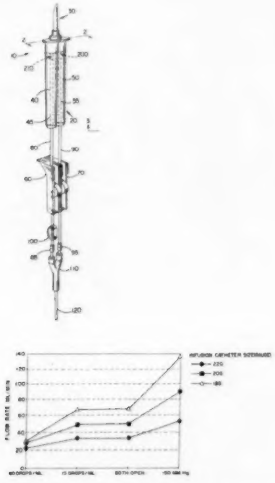
a forward portion extending forwardly of said body portion and tapering inwardly to a front tip, the forward portion having a second lumen axially offset from the first lumen and adapted for receiving a needle therein with the forward tip of the needle extending forwardly of the front tip and the rear of the needle extending rearwardly alongside the dilator member body portion.

5,910,135

INTRAVENOUS INFUSION SYSTEM

Admir Hadzic, Montclair, N.J., and Jerry Darius Vloka, New York, N.Y., assignors to Innovative Design Associates, Montclair, N.J.

Filed Mar. 31, 1997, Appl. No. 823,064
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—251 **6 Claims**



1. An infusion system for intravenous administration of fluid to a patient from a fluid reservoir comprising:

a supply tube assembly effective for dividing a flow of fluid from the fluid reservoir into a macroflow path and a microflow path;

a dual-sight drip chamber, the dual-sight drip chamber comprising a macrodrip chamber and a microdrip chamber;

a flow control device effective for regulating flow of fluid in the macroflow path and a flow control device effective for regulating flow of fluid in the microflow path;

a clamp effective for stopping the flow of fluid in the macroflow path; and

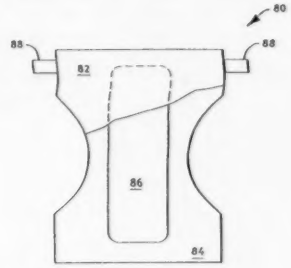
a junction effective for receiving and joining the macroflow path and microflow path into a single flow.

5,910,136

ORIENTED POLYMERIC MICROPOROUS FILMS WITH FLEXIBLE POLYOLEFINS

Kevin G. Hetzler, Alpharetta, and Rob L. Jacobs, Woodstock, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Dec. 30, 1996, Appl. No. 775,087
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—367 **12 Claims**



1. A microporous oriented film comprising:

a polyolefin resin including a propylene-based polymer with atactic polypropylene units;

at least about 40% by weight of the film of a filler, said filler including particles having a particle size that contributes to pore formation;

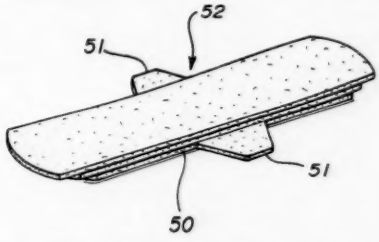
wherein said film has a water vapor transmission rate of at least about 300 $g/m^2/24$ hours, measured by modified test procedure ASTM E-960.

5,910,137

LAYERED ABSORBENT PRODUCTS

Tracey A. Clark, North Brunswick; Mary Gail Ciesielski, East Brunswick, and Kathleen D. O'Donnell, Somerville, all of N.J., assignors to McNeil-PPC, Inc., Skillman, N.J.

Continuation of application No. 08/236,762, Apr. 29, 1994, abandoned. This application Sep. 30, 1996, Appl. No. 723,741.
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—387 **19 Claims**



1. An absorbent feminine hygiene product which is configured for releasable attachment to a user's garment, the product comprising three stacked individual absorbent pads, each of said pads comprising a top liquid-permeable surface opposite a bottom surface and having disposed therebetween an absorbent layer and a barrier layer, wherein a first of said absorbent pads having a peripheral edge, is configured for releasable attachment of the bottom surface of said first absorbent pad to the user's garment with a first attachment strength; a second of said absorbent pads having a peripheral edge and attachment means for releasably attaching the second pad to the top surface of the first absorbent pad, thereby forming a contact area between the first and second absorbent pads, with a second attachment strength, less than the first, in a manner to prevent separation of significant portions of the first absorbent pad from the second pad during use, at least a

portion of the peripheral edge of the second absorbent pad extends beyond at least a corresponding portion of the peripheral edge of the first absorbent pad; and a third of said absorbent pads having a peripheral edge and attachment means for releasably attaching the third pad to the top surface of the second absorbent pad, thereby forming a contact area between the second and third absorbent pads, with a third attachment strength, not greater than the second, in a manner to prevent separation of significant portions of the second absorbent pad from the third absorbent pad during use, at least a portion of the peripheral edge of the third absorbent pad extends beyond at least a corresponding portion of the peripheral edge of the second absorbent pad, wherein the attachment means is a layering adhesive which is applied to form a plurality of attachment zones having void areas, each void area having a major dimension of less than about ½ inch; said attachment means covers at least about 40% of the contact area between the first and second absorbent pads and the second and third absorbent pads.

11. A method of forming an absorbent feminine hygiene product which is configured for releasable attachment to a user's garment comprising the steps of:

a) forming a plurality of individual absorbent pads, each of said pads having a peripheral edge and comprising a top liquid-permeable surface opposite a bottom surface and having disposed therebetween an absorbent layer and a barrier layer;

b) configuring the bottom of a first of said absorbent pads for releasable attachment having a first attachment strength to the user's garment; and

c) releasably attaching, at a second attachment strength, less than the first attachment strength, the bottom surface of a second of said absorbent pads to the top surface of the first of said absorbent pads, thereby forming a contact area between the first and second absorbent pads, wherein the attachment means is a layering adhesive which is applied to form a plurality of attachment zones having void areas, each void area having a major dimension of less than about ½ inch; said attachment means covers at least about 40% of the contact area between the first and second absorbent pads, wherein at least a portion of the peripheral edge of the second absorbent pad extends beyond at least a corresponding portion of the peripheral edge of the first absorbent pad.

5,910,138

FLEXIBLE MEDICAL CONTAINER WITH SELECTIVELY ENLARGEABLE COMPARTMENTS AND METHOD FOR MAKING SAME

William A. Sperko, Yorba Linda; Robert E. Turner, San Clemente; Steven L. Smith, Lake Forest, and William B. Ray, Anaheim, all of Calif., assignors to B. Braun Medical, Inc., Bethlehem, Pa.

Continuation-in-part of application No. 08/837,927, Apr. 11, 1997, which is a continuation-in-part of application No. 08/647,583, May 13, 1996, abandoned. This application Nov. 12, 1997, Appl. No. 967,692.

Int. Cl.[6] A61B *19/00*

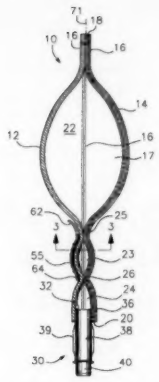
U.S. Cl. 604—408 **25 Claims**

1. A flexible container for combined storage and administration of a medical solution, the container comprising:

a flexible front sheet having a first, relaxed state defining a first surface area;

a flexible rear sheet, having a first, relaxed state defining a first surface area equal to the surface area of the flexible front sheet, the front and rear sheets sealed together along a common peripheral edge to form a volume enclosure defining a first volume capacity; and

wherein at least one of the front or rear sheets is permanently deformed into a second, stretched state defining a second surface area greater than the first surface area to define a second volume capacity greater than the first volume capacity.



5,910,139

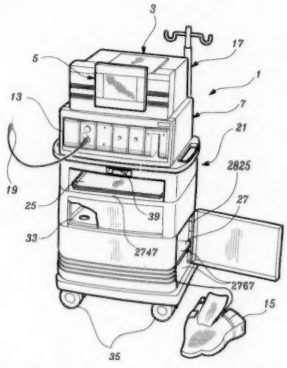
NUMERIC KEYPAD SIMULATED ON TOUCHSCREEN

Bruce Robert Cochran, St. Charles, Mo.; Christopher Michael Eberhardt, Fort Worth, Tex., and John A. Painter, Bridgeton, Mo., assignors to Storz Instrument Co., St. Louis, Mo.

Provisional application No. 60/025,498, Aug. 29, 1996. This application Aug. 28, 1997, Appl. No. 919,607.

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—1 **2 Claims**



1. A system for controlling a plurality of ophthalmic microsurgical instruments connected thereto, said microsurgical instruments for use by a user such as a surgeon in performing ophthalmic surgical procedures, said system comprising:

a data communications bus;

a user interface connected to the data communications bus, said user interface providing information to the user and receiving information from the user which information is representative of operating parameters of the microsurgical instruments;

a first surgical module connected to and controlling one of the microsurgical instruments as a function of at least one of the operating parameters, said first surgical module being connected to the data communications bus;

a second surgical module connected to and controlling another one of the microsurgical instruments as a function of at least one of the operating parameters, said second surgical module being connected to the data communications bus;

wherein the data communications bus provides communication of data representative of the operating parameters between the user interface and the first and second surgical modules;

a touch-responsive screen having a display responsive to the user interface for displaying information to the user; and

wherein the display includes a representation of a numeric keypad and wherein the user interface is responsive to information provided by the user via the numeric keypad for changing the operating parameters of the microsurgical instruments.

5,910,140

LASER MEDICAL DEVICE

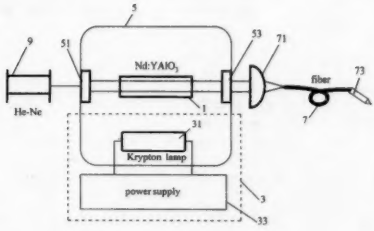
Hong Yuan Shen; Rui Rong Zeng; Yu Ping Zhou; Gui Fang Yu; Cheng Hui Huang; Zheng Dong Zeng; Wen Xiong Lin, and Rui Fen Wu, all of Fuzhou, China, assignors to Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fujian, China

Filed Sep. 27, 1994, Appl. No. 312,780

Claims priority, application China, Sep. 27, 1993, 93 1 17719

Int. Cl.[6] A61N *5/02;* **H03F** *7/00*

U.S. Cl. 606—3 **13 Claims**



1. A laser medical device comprising:

$Nd:YAlO_3$ laser crystal,

a pumping system for illuminating said laser crystal with pumping light and achieving population inversion of Nd^{3+} ion in said laser crystal, said pumping system including

a pumping light source for irradiating said pumping light on said laser crystal,

presetting means for setting in advance a value of output power of laser light adaptable to different medical treatment requirements, and

a power supply for providing said pumping light source with a suitable input power based on said output power value set by said presetting means, and

a resonant cavity for resonating light emitted from said Nd^{3+} ion to produce a beam of output laser light having a predetermined wavelength at said output power,

the wavelength of said laser light falling within a transparent range of quartz optical fibres so that said laser light is transmittable through said optical fibres to a therapy location of a subject.

5,910,141

ROD INTRODUCTION APPARATUS

Matthew M. Morrison, Cordova, Tenn.; Eric A. Loveless, Jacksonville, Fla.; David L. Brumfield, Southaven, Miss.; B. Thomas Barker; Catalina J. Carroll, both of Memphis, Tenn.; David Miller, Eads, Tenn., and Dominique Petit, Sur Mer, France, assignors to SDGI Holdings, Inc., Wilmington, Del.

Filed Feb. 12, 1997, Appl. No. 798,092

Int. Cl.[6] A61B *17/56*

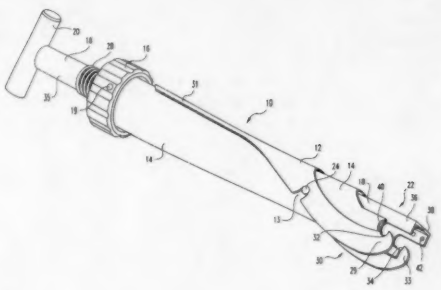
U.S. Cl. 606—61 **30 Claims**

24. An implant holder having a rod reduction mechanism for vertically aligning a longitudinal member and an implant, comprising:

means for gripping the implant;

a sleeve having an axis and a distal end adapted to engage the longitudinal member, said sleeve having an axial bore sized to receive said means for gripping, said means for gripping slidably received within said axial bore; and

means for axially displacing said sleeve with respect to said means for gripping, whereby a vertical offset longitudinal member is urged into alignment with the implant.



5,910,142

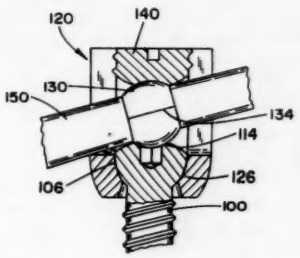
POLYAXIAL PEDICLE SCREW HAVING A ROD CLAMPING SPLIT FERRULE COUPLING ELEMENT

Stephen Tatar, Montvale, N.J., assignor to Bones Consulting, LLC, Summit, N.J.

Filed Oct. 19, 1998, Appl. No. 174,962

Int. Cl.[6] A61B *17/70*

U.S. Cl. 606—61 **4 Claims**



1. A bone screw for connecting a bone with a rod, said bone screw comprising

a screw member having a threaded portion and a head, said head *having a spherical segment-shaped portion and a recess* formed therein,

a cylindrical receiver member for receiving said head of said screw member and said rod, said receiver member having a first end and a second end, a bore provided in said receiver *member between said first and second ends, a hollow spheri*cal portion in said bore for receiving said head at a position inwards of said second end, said receiver member further having a substantially U-shaped cross-section with two free legs which are provided with a thread,

a pressure means mounted to the rod and initially selectably advanceable therealong, said pressure means being positionable in the recess of the head, and said pressure means being lockable to the rod when a radial force is applied thereto, and

a locking means screwed onto said receiver member thread for providing a radial force onto the pressure means thereby locking it to the rod, and for forcing the pressure means onto the head of the screw, thereby locking the body, rod and screw together.

5,910,143

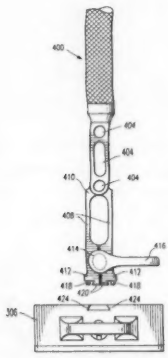
INTRAMEDULLARY ALIGNMENT GUIDE TOOL

Phil Cripe, Gainesville, and Cary M. Mauldin, Lake City, both of Fla., assignors to Exactech, Inc., Gainesville, Fla.

Continuation-in-part of application No. 08/727,281, Oct. 9, 1996, Pat. No. 5,688,281, which is a continuation of application No. 08/357,430, Dec. 16, 1994, abandoned. This application Nov. 18, 1997, Appl. No. 972,774.

Int. Cl.[6] A61F *5/00*

U.S. Cl. 606—87 **8 Claims**



1. A handling tool for coupling to a cutting guide, including:

(a) a substantially elongate first end shaped to be grasped by a human hand; and

(b) at least two mating tines, disposed at a second end of the tool, wherein the mating tines are biased to move towards each other, and wherein the mating tines are forced apart from each other by a cam portioned therebetween, and wherein the mating tines each include a mating feature for mating the tool with the cutting guide.

5,910,144

PROSTHESIS GRIPPING SYSTEM AND METHOD

Reid Hayashi, Palo Alto, Calif., assignor to Endovascular Technologies, Inc., Menlo Park, Calif.

Filed Jan. 9, 1998, Appl. No. 5,122

Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—108 **24 Claims**

1. An apparatus for gripping and enabling manipulation of the end of a prosthesis deployed or implanted at a repair site in a corporeal lumen, comprising:

a catheter including a shaft and proximal and distal ends;

a plurality of gripping members adapted for gripping and enabling manipulation of the end of the prosthesis, located in the catheter distal end;

means for atraumatically engaging with the prosthesis disposed upon the plurality of gripping members; and

means for actuating the plurality of gripping members between an expanded state and a contracted state, located in the catheter proximal end, extending through the catheter shaft and attached to the plurality of gripping members.

5,910,145

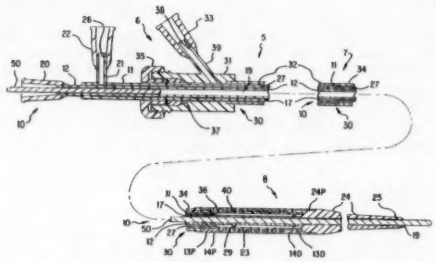
STENT DELIVERY CATHETER SYSTEM

Robert E. Fischell, 14600 Viburnum Dr., Dayton, Md. 21036; David R. Fischell, 71 Riverlawn Dr., Fair Haven, N.J. 07704, and Tim A. Fischell, 6447 Whitney Woods, Richland, Mich. 49083

Continuation-in-part of application No. 08/828,662, Mar. 31, 1997, Pat. No. 5,792,144. This application Apr. 28, 1998, Appl. No. 66,852.

Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—108 ***18 Claims***



1. A stent delivery catheter system for placing a stent within a stenosis of a vessel in a human body, the system comprising:

a flexible guide wire;

a balloon angioplasty catheter having a distal portion and having an inflatable balloon which has a proximal end and a distal end, the balloon being located at the distal portion of the balloon angioplasty catheter and a stent coaxially mounted around the balloon; the balloon angioplasty catheter also having a flexible, gradually tapered, distal tip which has a central lumen through which the guide wire can be slideably moved; the distal tip also having a comparatively short, cylindrical, proximal section with an outwardly extending shoulder located at the distal end of the short proximal section; and

a sheath generally in the form of an elongated cylinder that is coaxially located around the balloon angioplasty catheter, the sheath having a distal end that is adapted to apply a distally directed push force to the outwardly extending shoulder located at the distal end of the proximal section of the distal tip, which push force is transmitted into the gradually tapered distal tip so that the gradually tapered distal tip can be pushed through the stenosis in the vessel of the human body.

5,910,146

DEVICE FOR ASSISTING CHILDBIRTH

Gary E. Alexander, Baton Rouge, La., assignor to Medisys Technologies, Inc., Baton Rouge, La.

Continuation-in-part of application No. 08/413,125, Mar. 29, 1995, Pat. No. 5,632,750, which is a continuation-in-part of application No. 08/250,054, May 27, 1994, Pat. No. 5,593,413, which is a continuation-in-part of application No. 08/036,560, Mar. 25, 1993, Pat. No. 5,318,573, which is a continuation-in-part of application No. 07/982,016, Nov. 24, 1992, Pat. No. 5,217,467, and a continuation of application No. 07/851,068, Mar. 13, 1992, abandoned, which is a continuation-in-part of application No. 07/522,592, May 14, 1990, Pat. No. 5,122,148.

This application May 27, 1997, Appl. No. 863,921.

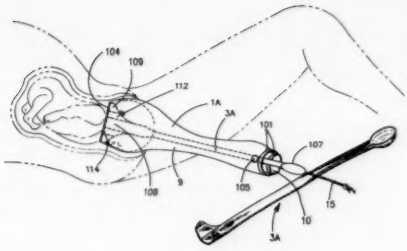
This patent is subject to a terminal disclaimer

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—122 **28 Claims**

1. A device for assisting the delivery of a fetus comprising:

a substantially cylindrical elongated member constructed of a braid material comprising loosely interwoven fibers, wherein said elongated member is folded back upon itself to form an inner layer, an outer layer, an annular space defined by said inner layer and said outer layer, and a mouth sized to receive the head of a fetus, said braid material configured to exert an



axial gripping force on the head of a fetus positioned within said mouth of said elongated member when a longitudinal force is exerted on said elongated member;

a means for positioning said mouth over the head of a fetus comprising at least one insertion wand comprising an elongated shaft having a control end and a substantially smooth thin application end, said application end comprising a plurality of hinged sections having a fully extended position, said application end having an inner face, an outer face and a leading edge, said application end sized to fit between the head of a fetus and the walls of the birth canal during delivery when said hinged sections are in said fully extended position; and

a means for restricting the size of said mouth after it has been placed over the head of a fetus.

5,910,147

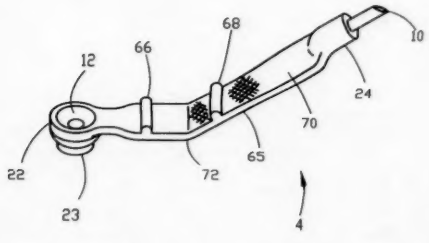
ANGLED REPLACEABLE COMEDONE EXTRACTOR

Mark R. Rosenberg, Paradise Valley, Ariz., and Donald J. Ersler, 725 Garvens Ave., Brookfield, Wis. 53005, assignors to Donald J. Ersler, Brookfield, Wis.

Continuation-in-part of application No. 08/770,944, Dec. 31, 1996, abandoned. This application Feb. 2, 1998, Appl. No. 17,356.

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—131 **22 Claims**



1. A replaceable comedone extractor for removal of pimples comprising:

a body having a first end, and a second end;

a pimple drain member being disposed at said first end;

a lancet being fabricated from a sharpened metal tip, said lancet being disposed at said second end; and

a cushion pad being fastened to a bottom of said pimple drain member.

5,910,148

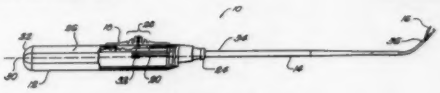
SUTURE RETROGRADER

William J. Reimels, Scituate, and Richard F. Wenstrom, Jr., Norwood, both of Mass., assignors to Mitek Surgical Products, Inc., Westwood, Mass.

Filed Aug. 6, 1997, Appl. No. 907,223

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—144 **26 Claims**



1. A suture grasping device, comprising:

an elongate housing having a proximal end, a distal end, a sidewall disposed between the proximal and distal ends and a longitudinal axis;

a hollow introducer needle having a proximal end attached to the distal end of the housing, and an open distal end having a tissue penetrating edge;

a suture grasping element disposed within the open distal end of the introducer needle, the suture grasping element being selectively movable between at least extended and retracted positions; and

an actuator element slidably mounted on the sidewall of the housing, the actuator element being effective to move the suture grasping element between extended and retracted positions;

wherein the actuator element is movable among a first position in which the suture grasping element is fully retracted within the introducer needle, an intermediate position in which the suture grasping element is partially extended from the introducer needle and a second position in which the suture grasping element is fully extended from the introducer needle, and wherein a biased detent means is provided in the housing for releasably locking the actuator in at least the intermediate position.

5,910,149

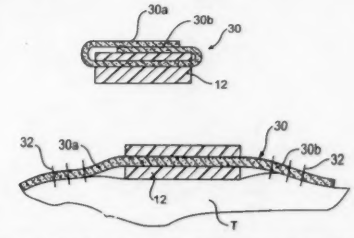
NON-SLIPPING GASTRIC BAND

Lubomyr I. Kuzmak, 30 Crest Dr., South Orange, N.J. 07079

Filed Apr. 29, 1998, Appl. No. 67,918

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—157 **5 Claims**



1. In combination, a gastric band adapted for laparoscopic placement around the stomach of a patient so as to control the size of the stomach opening and holding means for holding said gastric band in place around the stomach, said gastric band comprising a band member having a proximal end and a distal end, means for affixing the distal end in place at an intermediate part of the band member so as to form a looped portion including an inner stomach-facing surface, a fluid reservoir, an inflatable member located on said inner surface, and fluid communication means, extending between said inflatable member and said distal end of said band member, for providing fluid communication between said inflatable member and said reservoir so as to enable inflation of said inflatable member from said reservoir, and said holding means being secured to said band member and including oppositely directed portions and extending transversely to said band member,

said portions being movable between a first position wherein the holding means is used to hold the gastric band in place and wherein said portions extend beyond said band member on opposite sides thereof so as to enable said portions to be affixed to tissue adjacent to the band and a second position wherein the holding means and the band member are adapted to be inserted through a laparoscopic cannula and wherein said portions are brought close to the band member so as to decrease the cross sectional profile presented by the holding means and the band member.

5,910,150

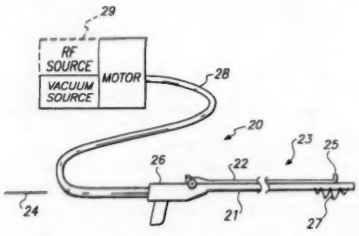
APPARATUS FOR PERFORMING SURGERY

Vahid Saadat, Redwood Shores, Calif., assignor to AngioTrax, Inc., Sunnyvale, Calif.

Provisional application No. 60/032,196, Dec. 2, 1996. This application May 27, 1997, Appl. No. 863,877.

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—159 **34 Claims**



1. Apparatus for treating a wall of a hollow-body organ or vessel defining a cavity, the apparatus comprising:

a catheter shaft adapted for insertion into a cavity, the catheter shaft having a distal region and a longitudinal groove;

a guide member including an end effector to treat an interior wall of the hollow-body organ, the guide member disposed for translation in the longitudinal groove to define a treatment zone having a length;

means for disposing the end effector at a selected orientation relative to the catheter shaft within the treatment zone; and

stabilization means, disposed in the distal region and configured to span the length of the treatment zone, the stabilization means stabilizing the catheter shaft and guide member within the cavity while the end effector treats the wall.

5,910,151

INSTRUMENT FOR CLEANING THE TOP OF A TONGUE

Emmanuel A. Adedokun, 22327 W. 8 Mile Rd. B34, Detroit, Mich. 48219

Filed Dec. 31, 1997, Appl. No. 1,440

Int. Cl.[6] A61B *17/24*

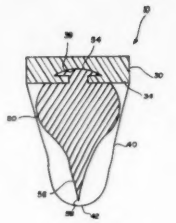
U.S. Cl. 606—161 **18 Claims**

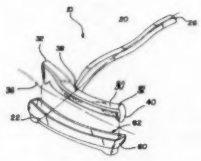
1. An instrument for cleaning the top of a tongue, comprising:

a handle having longitudinal axis, a proximal end, a distal end, a grasping portion, said longitudinal axis being extended through said handle proximal end and said handle distal end, said grasping portion being located towards said handle distal end, wherein said handle has a uniform cross-section along a length thereof and is bent to define at least two arcuate undulations therein which extend in opposite directions;

an elongate arcuate head having a pair of opposite ends, and a lower surface, said handle proximal end being coupled to said head; and

an elongate arcuate scraper member having a pair of opposite ends, an attachment portion and an arcuate scraping portion, said scraping portion having a scraping edge, said scraping portion being extended between said scraper member opposite ends, said scraper member being extended between said head





opposite ends, said attachment portion being imbedded to said lower surface of said head, said scraping edge of said scraping portion being extended away from said lower surface of said head.

5,910,152

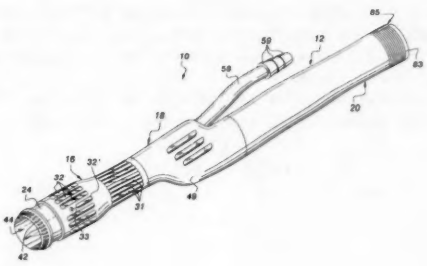
METHOD FOR SUPPLYING A POWERED HANDPIECE

F. Barry Bays, Clearwater, Fla., assignor to Xomed Surgical Products, Inc., Jacksonville, Fla.

Division of application No. 08/775,147, Dec. 31, 1996, which is a continuation-in-part of application No. 08/719,130, Sep. 24, 1996. This application Jan. 9, 1998, Appl. No. 5,014.

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **10 Claims**



1. A method for supplying a powered handpiece for surgery comprising the steps of

providing a sterilizable handpiece body having a drive shaft for driving a surgical blade and a motor enclosure compartment, providing a non-sterile motor assembly of a size to be received in the motor enclosure compartment to power the drive shaft and providing a sterile installation device having a passage therethrough of a size to receive the motor assembly;

sterilizing the handpiece body with the motor assembly removed therefrom;

placing the sterile installation device on the sterilized handpiece body with the passage in communication with the motor enclosure compartment;

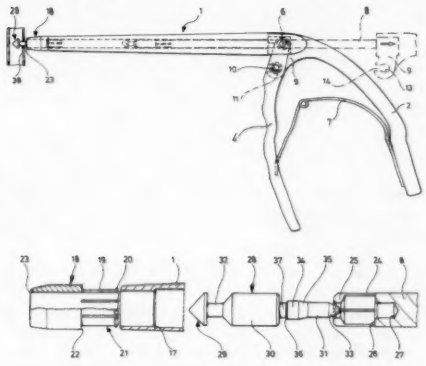
introducing the motor assembly through the passage and into the motor enclosure compartment without contaminating the sterilized handpiece body; and

removing the installation device from the handpiece body leaving the motor assembly in the motor enclosure compartment.

5,910,153
SURGICAL PUNCH

Rupert Mayenberger, Rielasingen, Germany, assignor to Aesculap AG & Co. KG, Tuttlingen, Germany

Filed Dec. 4, 1997, Appl. No. 984,906
Claims priority, application Germany, Dec. 4, 1996, 196 50 204
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—184 **33 Claims**



1. A surgical punch, comprising:

a tubular shaft having a longitudinal axis, a distal end forming *an annular cutting edge, and a proximal end;*

an advancing element mounted for axial displacement in said tubular shaft;

said advancing element displaceable in said tubular shaft according to an actuating member arranged at said proximal end;

a cutting member held on said advancing element and displaceable therewith;

said cutting member having a cutting section adapted to move axially in an operative range to interact with said annular cutting edge when said advancing element is moved; and

a plurality of first projections and associated first recesses arranged circumferentially to lock said cutting member in a locking position relative to said advancing element when said cutting member is in said operative range; wherein:

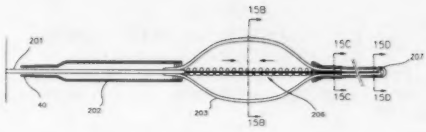
said plurality of first projections are elastically displaceable radially, and extend radially for engaging said first recesses *when said first projections are moved axially toward said* first recesses; and

in said locking position of said cutting member, a distal inner circumferential wall portion of said tubular shaft prevents said plurality of first projections from moving radially away from said first recesses to a release position, wherein said first projections disengage said first recesses.

5,910,154
PERCUTANEOUS CATHETER AND GUIDEWIRE HAVING FILTER AND MEDICAL DEVICE DEPLOYMENT

Ross S. Tsugita, Mountain View; Tracy D. Maahs, Redwood City, and Yue-Teh Jang, Fremont, all of Calif., assignors to *EMBOL-X, Inc., Mountain View, Calif.*

Continuation of application No. 08/852,867, May 8, 1997. This application Feb. 12, 1998, Appl. No. 22,510.
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—200 **3 Claims**



1. A filter device for capturing embolic material in a blood vessel, comprising:

a guidewire having a distal end, a proximal end, and proximal and distal regions;

an expansion frame attached to the distal region of the guidewire, the expansion frame being expandable between a contracted and an enlarged condition, wherein the expansion frame comprises a plurality of struts;

a filter mesh attached to the expansion frame; and

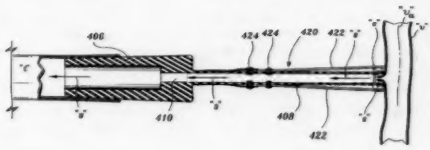
an actuator disposed within the guidewire and including a spring,

wherein the guidewire includes a distal segment which can be moved longitudinally relative to a proximal segment of the *guidewire, and wherein a proximal end of each strut is in* contact with the proximal segment of the guidewire and a distal end of each strut is in contact with the distal segment of the guidewire, and wherein the expansion frame and filter are expandable between a contracted and an enlarged condition by manual operation of the actuator against the action of the spring.

5,910,155
VASCULAR WOUND CLOSURE SYSTEM

Keith Ratcliff, Newton, and Roberto Pedros, Seymour, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Jun. 5, 1998, Appl. No. 92,430
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—213 **18 Claims**



1. An apparatus for facilitating closure of an opening in a blood vessel, which comprises:

a closure instrument including an elongated member defining a longitudinal axis and having proximal and distal ends, the *elongated member having a vacuum lumen extending at least* a portion of the length thereof for conveying a vacuum and terminating in a vacuum port adjacent the distal end of the elongated member, the distal end of the elongated member dimensioned to be positioned proximal a vessel opening in a blood vessel whereby vessel edge portions defining the vessel opening are at least drawn toward the vacuum port in response to a vacuum conveyed through the vacuum lumen; and

at least one surgical clip mounted adjacent the distal end of the elongated member and being adapted to be formed to an at least partially formed condition thereof, the one clip positioned with respect to the vacuum port to engage the vessel edge portions drawn toward the vacuum port upon movement of the one clip to the formed condition thereof to generally approximate the vessel edge portions to at least partially close the vessel opening.

5,910,156

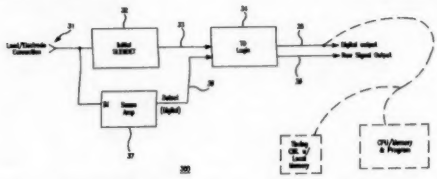
NON-PHYSIOLOGIC SENSE DETECTION FOR IMPLANTABLE MEDICAL DEVICES

Can Cinbis, Shoreview; James D. Reinke, Maple Grove, and Todd M. Tanji, Egan, all of Minn., assignors to Medtronic Inc., Minneapolis, Minn.

Filed Nov. 7, 1997, Appl. No. 966,107

Int. Cl.[6] A61N *1/37*

U.S. Cl. 607—27 **14 Claims**



1. NPS Circuit for detecting non Physiologic events wherein said NPS Circuit is adapted to be disposed in an implantable medical device and connected to said device by an output signal line so as to provide a first input to said NPS circuit from said output signal line originating from a sense amplifier of said device wherein said output provides a signal to said first input indicating the occurrence of a sensed event detected by said sense amplifier and wherein said signal continues for so long as said sense amplifier is detecting said sensed event, and wherein said sense amplifier is suitable for connection to a living body so as to receive physiologically induced electrical signals through a contact electrode adapted for contact to said living body, and wherein said NPS circuit is also electrically connected to said device by a second input to said contact electrode to also receive electrical signals from said body, said NPS circuit comprising:

a slew detector circuit for detecting fast slew signals on said second input and producing a SLEWDET output signal for indicating the occurrence of such detected fast slew signals, and

a transient detection logic circuit connected to receive said SLEWDET output indicating the presence of a fast slew signal, and connected to receive said first input from said sense amplifier output to said signal line NPS circuit, and having a timing mechanism configured to initiate a timing sequence when said SLEWDET output signal indicates the occurrence of a fast slew, and having an NPS confirmation circuit comprising circuit means for detecting sufficient amplitude to indicate a slow decay on said first input from said sense amplifier and for producing an NPS output signal only if a slow decay is detected within a predetermined time after initiation of said timing sequence.

5,910,157

AUTOMOTIVE AIR CONDITIONING SYSTEM

Yoshitoshi Noda, Tochigi, Japan, assignor to Calsonic Corporation, Tokyo, Japan

Filed Dec. 3, 1997, Appl. No. 984,020

Claims priority, application Japan, Jun. 30, 1997, 9-174465

Int. Cl.[6] B60H *1/32*

U.S. Cl. 62—133 **11 Claims**

1. An air conditioning system for a motor vehicle powered by an internal combustion engine, comprising:

first means for carrying out a first cycle, which includes a compressor driven by the engine, a main condenser, a first sub-condenser and an evaporator which are connected through pipes to form a first refrigerant circulation circuit through which a refrigerant flows from an outlet of said compressor to an inlet of the same-while changing its phase, said first cycle causing said first sub-condenser as a heater and said evaporator as a cooler when operated;

second means for carrying out a second cycle, which includes said compressor and a second sub-condenser which are connected through pipes to form a second refrigerant circulation circuit through which said refrigerant flows from the outlet of the compressor to the inlet of the same while changing its phase, said second cycle causing said second sub-condenser as a heater when operated;

switch means for switching said first and second means;

a heater core;

third means for defining first and second independent air flow passages, said first passage having said heater core, said first sub-condenser and said evaporator installed therein, said second passage having said second sub-condenser installed therein;

a sub-evaporator arranged in the pipe extending from an outlet of said second sub-condenser to an inlet of said compressor;

a first cooling water circuit through which engine cooling water of said engine is fed to said heater core to warm air passing through the heater core;

a second cooling water circuit through which engine cooling water of said engine is fed to said sub-evaporator to carry out heat exchange between the engine cooling water and the refrigerant flowing in said pipe; and

fourth means for controlling the flow of engine cooling water directed to said sub-evaporator in accordance with a load of said engine when said switch means selects said second means.

5,910,158

FUZZY CONTROL APPARATUS AND METHOD OF BRANCHED REFRIGERANT FLOW AND FUEL COMBUSTION IN MULTI ABSORPTION TYPE HEAT PUMP

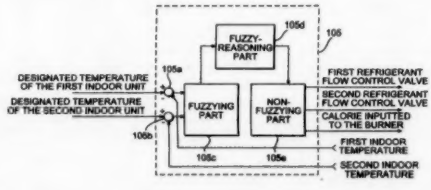
Joon-Hyung Park, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 15, 1997, Appl. No. 950,972

Claims priority, application Rep. of Korea, Oct. 15, 1996, 96-45991

Int. Cl.[6] F25B *30/04*

U.S. Cl. 62—148 **5 Claims**



1. A fuzzy control apparatus for controlling refrigerant flow and fuel combustion in a multi absorption type heat pump, comprising:

an indoor temperature detecting section for detecting a temperature of an indoor unit;

a first microcomputer, electrically coupled to the indoor temperature detecting section, for receiving a detected temperature from the indoor temperature detecting section and for receiving a temperature designated by a user; and

a second microcomputer, electrically coupled to the first microcomputer, for controlling a burner and a fuel flow control valve based on said detected temperature and said temperature designated by the user.

5,910,159

REFRIGERATING CYCLE APPARATUS

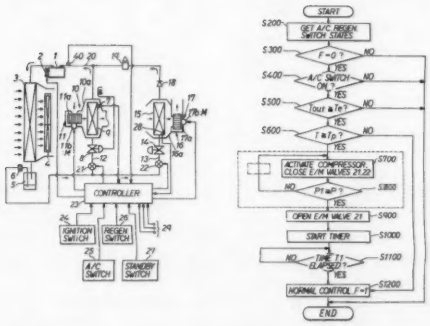
Hiroki Matsuo, Kariya; Hisashi Tanaka, Anjo, and Hikaru Sugi, Nagoya, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Nov. 26, 1997, Appl. No. 978,460

Claims priority, application Japan, Nov. 28, 1996, 8-318206

Int. Cl.[6] G05D *23/32*

U.S. Cl. 62—158 **16 Claims**



11. A method of controlling a refrigerating circuit including a compressor and first and second air conditioning units in parallel fluid communication therewith, comprising the steps of:

determining if a temperature at the first air conditioning unit is less than a first predetermined temperature;

determining if a temperature at the second air conditioning unit is less than a second predetermined temperature if the temperature at the first air conditioning unit is less than the first predetermined temperature;

cutting off a flow of refrigerant to both the first and second air conditioning units when the temperature at the second air conditioning unit is less than the second predetermined temperature; and

causing the compressor to suck stagnant refrigerant from the second air conditioning unit when the temperature at the second conditioning unit is less than the second predetermined temperature and until a predetermined circuit condition is reached.

5,910,160

ENHANCED REFRIGERANT RECOVERY SYSTEM

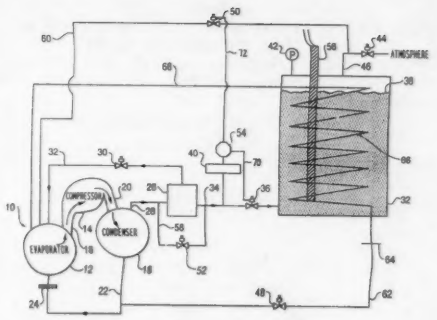
Sakin R. Cakmakci, York, and Walter A. Lobodinsky, Spring Grove, both of Pa., assignors to York International Corporation, York, Pa.

Division of application No. 08/833,535, Apr. 7, 1997, Pat. No. 5,806,322. This application Jun. 15, 1998, Appl. No. 97,256.

Int. Cl.[6] F25B *43/04*

U.S. Cl. 62—195 **19 Claims**

1. A refrigerant recovery system for use in connection with a refrigeration system having an evaporator, a compressor, and a condenser, and a purge unit connected to the condenser for receiving gaseous refrigerant and non-condensible gases from the condenser, the refrigerant recovery system comprising:



a tank connected to the purge unit for receiving purged gaseous refrigerant and purged non-condensible gases from the purge unit, the tank containing adsorbent material for recovering the purged gaseous refrigerant from the purged non-condensible gases; and

means for determining when a predetermined amount of gaseous refrigerant is received by the tank, said determining means being located upstream from the tank.

5,910,161

REFRIGERATING APPARATUS

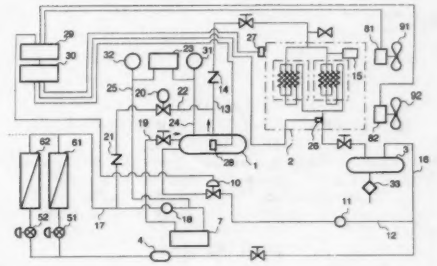
Makoto Fujita, 1-16, Hitachicho, and Yoshikazu Amo, 3376-21, Kajigaya, Muramatsu, both of Shimizu-shi, Shizuoka-ken, Japan

Continuation-in-part of application No. 08/528,037, Sep. 14, 1995, Pat. No. 5,685,163. This application Apr. 2, 1997, Appl. No. 831,769.

Claims priority, application Japan, Sep. 20, 1994, 6-224769

Int. Cl.[6] F25B *41/00;31/00*

U.S. Cl. 62—211 **14 Claims**



1. A refrigerating apparatus constituting a refrigerating cycle by sequentially connecting a compressor, a condenser, a liquid receiver, an accumulator, an expansion valve and an evaporator, wherein a triple-mixed refrigerant composed of 40–48 wt % of R-125, 47–57 wt % of R-143a and up to 10 wt % of R-134a is used as a refrigerant for said refrigerating cycle, ester oil, ether oil, or ester oil and ether oil is used as refrigerator oil, said compressor is composed of a scroll compressor, the downstream side of said condenser is connected to said scroll compressor through a liquid injection piping, and means for controlling an amount of a liquid injected into said compressor is provided in said liquid injection piping, wherein said refrigerator oil is mainly composed of ester oil of fatty acid and having a dynamic viscosity of 2–70 cSt 40° C. and 1–9 cSt at 100° C. and at least two ester linkages in a molecule.

5,910,162

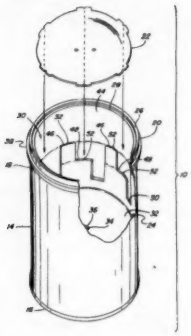
PRODUCT MERCHANDISING UNIT WITH VARIABLE/SELECTABLE PRODUCT CAPACITY

Keith Harbour, Springfield, Ill., and Christopher C. Bidwell, Dunwoody, Ga., assignors to Paul Flum Ideas, Inc., St. Louis, Mo.

Filed Apr. 27, 1997, Appl. No. 838,992

Int. Cl.[6] A47F *3/04*

U.S. Cl. 62—246 **36 Claims**



17. A container assembly adaptable for holding and displaying products comprising a tub member having opposed top and bottom end portions and a sidewall portion extending therebetween defining a cavity for holding products positioned therein, said top end portion being open and providing access to said tub cavity, the sidewall portion of said tub member including a plurality of longitudinally extending rib members located at spaced locations around said tub cavity, each of said longitudinally extending rib members including a plurality of longitudinally spaced shoulder portions, and a floor member selectably positionable within said tub cavity at locations corresponding to each of said longitudinally spaced shoulder portions for holding and supporting products positioned thereon, said floor member including a plurality of peripheral edge portions, said plurality of peripheral floor edge portions being positioned and located such that at least some of *said peripheral floor edge portions will mate with and rest upon the* shoulder portions located at each longitudinally spaced location on said plurality of rib members.

5,910,163

REFRIGERATOR WITH SEVERAL LOCKABLE COMPARTMENTS

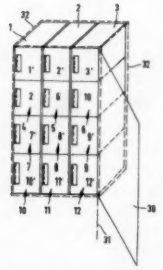
Hans Schlamp, Munich, Germany, assignor to Accumulata Verwaltungsgesellschaft mbH, Munich, Germany

Filed Sep. 25, 1997, Appl. No. 936,746

Claims priority, application Germany, Sep. 26, 1996, 196 39 696

Int. Cl.[6] F25D *3/04*

U.S. Cl. 62—256 **17 Claims**



1. Refrigerator with several cooling compartments (**1** to **12**), each of which can be closed with a flap (**1'** to **12'**), characterized by a door (**30**), which, when manipulated into its closed position, the flaps (**1'** to **12'**) are moved into their closed position by means of the door (**30**).

5,910,164

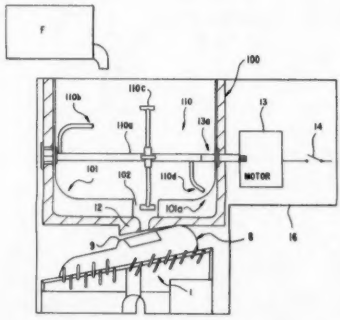
ICE CUBE DISPENSER FOR COMPRESSED FLAKED ICE CUBES

Jeff Snelling, Griffin, and Russel Axel Borg, Jr., Peachtree City, both of Ga., assignors to Hoshizaki America, Inc., Peachtree City, Ga.

Provisional application No. 60/035,265, Dec. 12, 1996. This application Aug. 20, 1997, Appl. No. 914,761.

Int. Cl.[6] F25C *5/18*

U.S. Cl. 62—344 **13 Claims**



1. An ice cube dispenser for compressed ice flakes, comprising:

an ice cube source;

an ice storage bin disposed adjacent said ice cube source, said ice storage bin having an arcuate bottom surface and at least two sides thereof, wherein arcuate contours are provided where said at least two sides join said arcuate bottom surface;

an agitator disposed within said ice storage bin, said agitator comprising a first ice agitator arm rotating on a shaft, said first *ice agitator arm defining a radius when said shaft is rotated,* said radius corresponding to a radius of said arcuate bottom surface and one of said arcuate contours of said ice storage bin,

wherein said first agitator arm has a shape which corresponds to a shape of said one of said arcuate contours between one of said at least two sides and said arcuate bottom surface.

5,910,165

RECEIVER/DRYER AND METHOD OF ASSEMBLY

Cary Haramoto, Newark, N.Y.; Michael L. Ford, Baldwyn, and Tom C. Wilson, Booneville, both of Miss., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Provisional application No. 60/022,832, Jul. 31, 1996. This application Jul. 14, 1997, Appl. No. 892,379.

Int. Cl.[6] F25B *43/00*

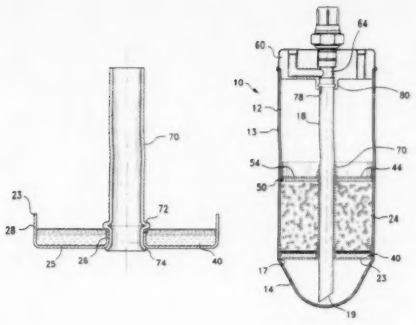
U.S. Cl. 62—474 **23 Claims**

1. A receiver/dryer, comprising:

a canister having a longitudinally-extending cylindrical sidewall, a first end cap integral with one end of said sidewall and an opening at another end of said sidewall;

a pick-up tube extending longitudinally within said canister with a first end of said pick-up tube proximate said first end cap and a second end of said pick-up tube spaced remotely from said first end cap;

a desiccant tube disposed in surrounding, fluid-tight relation to said pick-up tube, said desiccant tube and said pick-up tube having cooperating, mechanically-deformed structure creating a fluid-tight, press-fit seal between said pick-up tube and said desiccant tube;



a first annular baffle having a peripheral dimension closely matching an interior dimension of said sidewall and fluidly-sealed to said desiccant tube, disposed in said canister proximate said first end cap;

a second annular baffle having a peripheral dimension closely matching the interior dimension of said sidewall and a central opening receiving said desiccant tube, said second baffle being disposed in said canister and received about said desiccant tube remotely from said first end cap;

loose desiccant material disposed in said canister and surrounding said desiccant tube between said first and second baffles; and

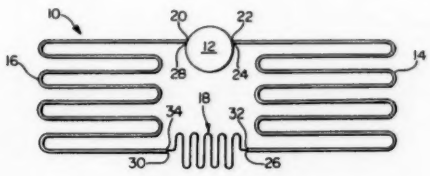
a second end cap having first and second passages extending through the second end cap to allow refrigerant to flow into and out of said canister, said second end cap enclosing said other end of said sidewall and receiving said second end of said pick-up tube in one of said passages in a fluid-tight relation therewith.

5,910,166

REFRIGERATION SYSTEM AND A CAPILLARY TUBE THEREOF

Alan J. Mitchell, and Brent A. Junge, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 25, 1997, Appl. No. 977,964
Int. Cl.[6] F25B *41/06*
U.S. Cl. 62—511 **24 Claims**



1. A refrigeration system comprising:

a compressor having an inlet and an outlet;

a condenser having an inlet and an outlet and the condenser inlet connected to the compressor outlet;

an evaporator having an inlet and an outlet and the evaporator outlet connected to the compressor inlet; and

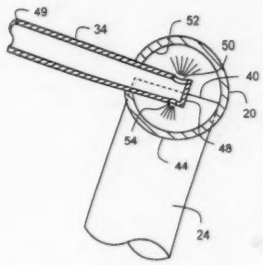
a capillary tube comprising at least a first portion and a second portion, the first portion having a first cross-sectional area and defining a capillary tube inlet, the second portion having a second cross-sectional area greater than the first cross-sectional area and defining a capillary tube outlet, and the capillary tube inlet is connected to the condenser outlet and the capillary tube outlet is connected to the evaporator inlet.

5,910,167

INLET FOR AN EVAPORATOR

Michael J. Reinke, Franklin, and Mark Voss, Franksville, both of Wis., assignors to Modine Manufacturing Co., Racine, Wis.

Filed Oct. 20, 1997, Appl. No. 954,646
Int. Cl.[6] F25B *39/02*
U.S. Cl. 62—525 **13 Claims**



1. An evaporator comprising a pair of spaced headers;

at least one tube extending between said headers and in fluid communication with each at one side thereof and defining a plurality of spaced refrigerant passages extending between said headers; and

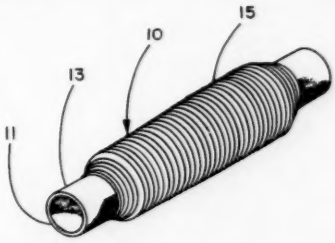
at least one refrigerant inlet within one of said headers, said inlet having a first port adapted to be connected to a source of refrigerant to be evaporated and oppositely directed second and third ports connected to said first port, said second port being directed away from said one side and said third port being directed toward said one side.

5,910,168

PROSTHETIC VASCULAR GRAFT

David J. Myers, Camp Verde, and James D. Lewis, Flagstaff, both of Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of application No. 08/705,912, Aug. 27, 1996, Pat. No. 5,716,395, which is a continuation of application No. 08/394,057, Feb. 24, 1995, abandoned, which is a continuation of application No. 07/989,442, Dec. 11, 1992, abandoned. This application Feb. 5, 1998, Appl. No. 18,866.
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **11 Claims**



1. A vascular graft comprising:

a) a biocompatible base substrate having a lumenal and ablumenal surface; and

b) a biocompatible material covering a substantial portion of the ablumenal surface of said substrate, said biocompatible material being secured to said ablumenal surface at at least one point and being deflectable with respect to said ablumenal surface;

wherein said biocompatible material covering said ablumenal surface comprises at least one layer of a porous film having a surface, wherein said at least one layer of film is arranged such that various

portions of the surface may be adjacent to each other and wherein a substantial portion of said various adjacent surfaces are free to move with respect to each other.

5,910,169

TOTAL MITRAL HETEROLOGOUS BIOPROSTHESIS TO BE USED IN MITRAL TRICUSPID HEART REPLACEMENT

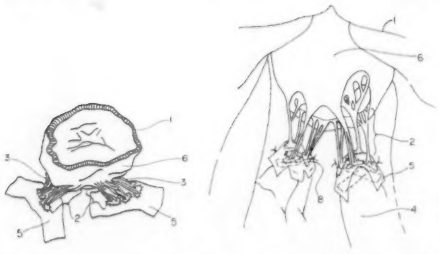
Mario Osvaldo Vrandecic Peredo, Minas Gerais, Brazil, assignor to Newcor Industrial S.A., Brazil

Continuation of application No. 08/591,112, Jan. 25, 1996, abandoned, which is a continuation of application No. 08/313,406, Sep. 27, 1994, abandoned, which is a continuation of application No. 07/976,468, Nov. 16, 1992, abandoned. This application May 14, 1997, Appl. No. 856,055.

Claims priority, application Brazil, Jul. 28, 1992, PI 9202905

Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **6 Claims**



1. A heterologous total biological stentless mitral valve prosthesis, said mitral valve prosthesis comprising:

a heterologous mitral sewing rim to be secured to the mitral annulus of a patient;

heterologous mitral leaflets extending from said heterologous *mitral sewing rim;*

a heterologous subvalvar apparatus comprising chordal attachments and heterologous portions of papillary muscle, with each chordal attachment being of a predetermined geometry equivalent to that of the patient's natural size and configuration and being naturally secured between said mitral leaflets and heterologous portions of papillary muscle, wherein said sewing rim, said leaflets and said subvalvar apparatus are obtained entirely in one piece from a mammal; and

at least two patches of heterologous material affixed to said heterologous portions of papillary muscle,

wherein said at least two patches of heterologous material are configured to be sutured to the papillary muscle of the patient to satisfy said predetermined geometry of the chordal attachments.

5,910,170

PROSTHETIC HEART VALVE STENT UTILIZING MOUNTING CLIPS

Matthew S. Reimink, St. Paul; Richard F. Schroeder, Oakdale; M. William Mirsch, II, Roseville, and Michael J. Girard, Lino Lakes, all of Minn., assignors to St. Jude Medical, Inc., St. Paul, Minn.

Filed Dec. 17, 1997, Appl. No. 992,595

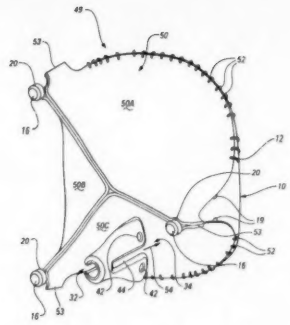
Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **15 Claims**

1. A prosthetic heart valve, comprising:

a stent having an inflow ring and a plurality of posts, each post extending from the ring to a post tip;

biocompatible leaflet material extending over the stent and substantially conforming to a profile of the stent, the material including a plurality of portions each of which extends adjacent a post tip; and



a clip having a shape generally conforming around one of the plurality of posts to clamp one of the portions of the material to the one of the plurality of posts.

5,910,171

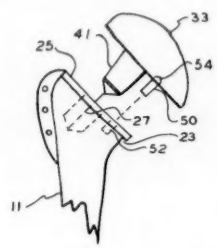
COMPONENTS FOR A MODULAR SHOULDER AND HIP PROSTHESIS

Frederick J. Kummer; Joseph D. Zuckerman, both of New York, N.Y.; Herve Jean Toggwiler, and Laurent Marie Aubertot, both of Cedex, France, assignors to Hospital for Joint Diseases, New York, N.Y.

Continuation-in-part of application No. 08/403,127, Mar. 13, 1995, abandoned, which is a continuation of application No. 08/031,220, Mar. 12, 1993, abandoned. This application Dec. 15, 1995, Appl. No. 579,021.

Int. Cl.[6] A61F *2/30;2/40*

U.S. Cl. 623—18 **7 Claims**



1. A prosthetic device for implanting in a ball and socket joint cavity of a patient comprising:

an enlongate stem having a longitudinal axis, a distal end and an opposite head end, said head end terminating in a generally flat surface with an elongate mounting lock bore formed therein, said mounting lock bore extending generally perpendicular to said flat surface of said stem;

an articulating head member having a generally curved articulating surface and an opposite generally flat planar surface, said head member including a generally elongate mounting lock member extending perpendicular from said planar surface and offsert from a central axis of said articulating head member, said device further including a plurality of bores *extending generally perpendicular into said planar surface* about said elongate mounting lock member and at least one bore extending generally perpendicular into said flat surface; *and*

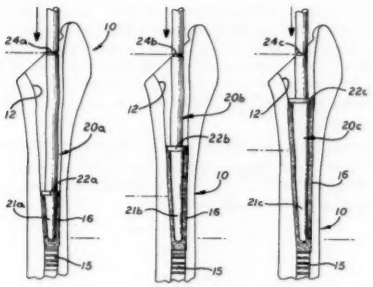
a pin element configured to be insertable into axially aligned said at least one bore and one of said plurality of said bores which allows customized orientation of the head member with respect to the stem to meet the anatomical requirement of the patient.

5,910,172

APPARATUS FOR, AND METHOD OF, PREPARING HIP PROSTHESIS IMPLANTATION

Brad L. Penenberg, Los Angeles, Calif., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed May 20, 1997, Appl. No. 859,219
Int. Cl.[6] A61F *2/32;2/28*
U.S. Cl. 623—23 **33 Claims**



1. Apparatus for use with a femur in a hip replacement where the femur has a hollow cavity defined by inner walls in the femur and where bone particles are implantable in the hollow cavity in the femur,

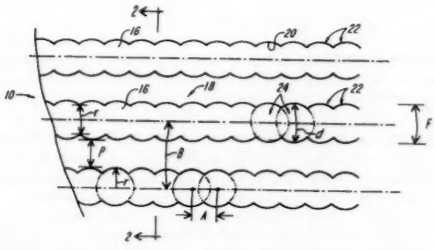
a tamp having an elongated shaft shaped to extend into the hollow cavity in the femur, the shaft having a collar at an intermediate position along the length of the shaft, the collar *extending outwardly from the shaft in a direction transverse to* the length of the shaft and being dimensional for disposition against the inner walls in the femur to provide for a packing of the bone particles in the hollow cavity in the femur in the space in the cavity below the collar.

5,910,173

IMPLANTABLE ARTICLE WITH ABLATED SURFACE AND METHOD OF FORMING SAME

Alfred F. DeCarlo, Jr., Stamford, and Douglas G. Noiles, New Canaan, both of Conn., assignors to Johnson & Johnson Professional, Inc., Raynham, Mass.

Division of application No. 08/724,493, Sep. 30, 1996, Pat. No. 5,716,412. This application Sep. 4, 1997, Appl. No. 923,306.
Int. Cl.[6] A61F *2/02;* **B44C** *1/22*
U.S. Cl. 623—66 **15 Claims**



1. A process for forming a textured surface upon an implantable prosthesis, comprising the steps of:

providing an implantable metallic body having a bone-engaging surface;

providing an ablation apparatus able to deliver energy to the body for ablating at least a portion of the metallic body; and

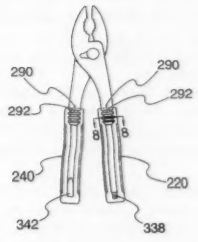
ablating a portion of the bone-engaging surface of the body in a predetermined pattern to form a plurality of furrows therein, each furrow being separated by a continuous raised ridge that is integral with the bone-engaging surface.

5,910,174

PLIERS-BASED, COMBINATION TOOL

Patrick W. Finn, 2526 Fifth Ave., North Riverside, Ill. 60546

Filed Jun. 25, 1997, Appl. No. 881,949
Int. Cl.[6] B25B *7/22*
U.S. Cl. 7—127 **12 Claims**



1. A pliers-based, combination tool comprising:

the pliers-based, combination tool including a pliers with a first jaw and a second jaw controlled by a first handgrip and a second handgrip respectively;

a first jaw shank connecting the first jaw to the first handgrip;

a second jaw shank connecting the second jaw to the second handgrip;

the first jaw shank including a jaw fulcrum;

the second jaw shank including a fulcrum aperture adapted to cooperate with the jaw fulcrum;

a fulcrum lock bolt being adapted to join the first jaw shank to the second jaw shank;

the first handgrip having at least one tool cooperating therewith;

the fulcrum lock bolt including a locking means for holding the first jaw separated from the second jaw, in order to permit use of the at least one tool;

the fulcrum lock bolt including a head, a threaded portion oppositely disposed from the head, and a slide member situated between the threaded portion and the head;

the locking means for holding the first jaw separated from the second jaw being situated on the slide member;

the jaw fulcrum including an expanded fulcrum jaw cradle;

the expanded fulcrum jaw cradle including a reduced fulcrum cradle and a lock cradle; and

the lock cradle being adapted to receive the locking means in order to permit a locked position with the first jaw and the second jaw separated;

the locking means on the slide member including a first flattened side and a second flattened side;

the first flattened side being oppositely disposed from the second flattened side;

the slide member being adapted to at least partially rotate or move within the fulcrum cradle;

the slide member being adapted to be removably received by the lock cradle in order to permit a releasably lockable position for the combination tool with the first jaw and the second jaw separated;

the expanded fulcrum jaw cradle receiving the slide member *until the head of the fulcrum bolt contacts the first jaw shank;*

the fulcrum aperture being adapted to at least partially receive the slide member;

a fulcrum nut being adapted to be received by the threaded portion;

a travel stop being situated between the second jaw and the second shank;

the travel stop combining with the fulcrum bolt to limit the separation between the second jaw and the first jaw;

a first removable sleeve being situated on the first handgrip;

a second removable sleeve being situated on the second handgrip;

the first removable sleeve being similar in structure to the second removable sleeve;

the first removable sleeve being cylindrical in nature with one closed end, and hollow on the inside and gripable on the outside;

the first removable sleeve being removably secured to the first handgrip;

the second removable sleeve being removably secured to the second handgrip;

the first removable sleeve being adapted to conceal the at least one tool;

the first shank and the second shank each having at least one male shank grip lock and at least one female shank grip lock;

the first removable sleeve and the second removable sleeve each having at least one male sleeve grip lock and at least one female sleeve grip lock;

the at least one male shank grip lock cooperating with the at least one female sleeve grip lock in order to provide for removing or securing a sleeve selected from the group consisting of the first removable sleeve and the second removable sleeve; and

the at least one female shank grip lock cooperating with the at least one male sleeve grip lock in order to provide for removing or securing a sleeve selected from the group consisting of the first removable sleeve and the second removable sleeve.

5,910,175

CLOSED-LOOP ADAPTIVE FUZZY LOGIC HYDRAULIC PRESSURE CONTROL FOR AN AUTOMATIC TRANSMISSION

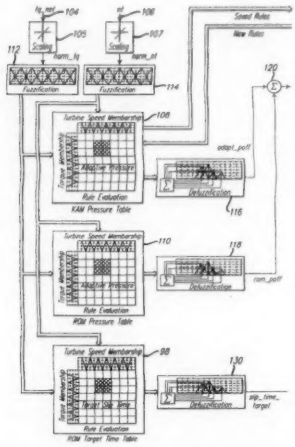
Steven George Malson, Dearborn Heights, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Apr. 7, 1997, Appl. No. 835,163

This patent is subject to a terminal disclaimer

Int. Cl.[6] G06F *17/00;19/00*

U.S. Cl. 701—57 **12 Claims**



1. A method for changing the pressure produced by a pressure source and supplied to a friction element to be engaged to produce a gear ratio change in an automatic transmission adapted for use with an engine and a torque converter turbine, comprising the steps of:

determining current turbine speed and current engine torque at the start of a gear ratio change, and slope time and slip time during the gear ratio change;

determining an initial pressure adjustment corresponding to current turbine speed and current engine torque through use of a first fuzzy logic system having adaptive pressure adjustment values referenced to turbine speed and engine torque;

producing a gear ratio change by pressurizing the friction element from the pressure source at the pressure resulting from use of said initial pressure adjustment;

determining a slip time target corresponding to current turbine speed and current engine target through use of a second fuzzy logic system having acceptable slip time target values referenced to turbine speed and engine torque;

producing a target error as the difference between the slip time target and slip time;

producing a target ratio of the slip time and slip time target;

determining a pressure correction corresponding to target error and target ratio through use of a third fuzzy logic system having adaptive pressure values referenced to target error and target ratio;

producing corrected pressure adjustment values corresponding to current turbine speed and current engine torque using said pressure correction and adaptive pressure adjustment values;

replacing said adaptive pressure adjustment values of the first fuzzy logic system corresponding to current engine torque and turbine speed with the corrected adaptive pressure adjustment values; and

producing a second gear ratio change by pressurizing the friction element from the pressure source at the pressure resulting through use of a first fuzzy logic system having said corrected adaptive pressure adjustment values.

5,910,176

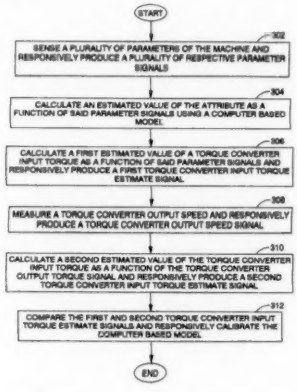
APPARATUS AND METHOD FOR CALIBRATING A COMPUTER BASED MODEL OF AN ATTRIBUTE OF A MOBILE MACHINE

Todd D. Creger, Metamora, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 28, 1996, Appl. No. 739,470

Int. Cl.[6] G06F *17/00;19/00*

U.S. Cl. 701—59 **7 Claims**


START
302
SENSE A PLURALITY OF PARAMETERS OF THE MACHINE AND RESPONSIVELY PRODUCE A PLURALITY OF RESPECTIVE PARAMETER SIGNALS
304
CALCULATE AN ESTIMATED VALUE OF THE ATTRIBUTE AS A FUNCTION OF SAID PARAMETER SIGNALS USING A COMPUTER BASED MODEL
306
CALCULATE A FIRST ESTIMATED VALUE OF A TORQUE CONVERTER INPUT TORQUE AS A FUNCTION OF SAID PARAMETER SIGNALS AND RESPONSIVELY PRODUCE A FIRST TORQUE CONVERTER INPUT TORQUE ESTIMATE SIGNAL
308
MEASURE A TORQUE CONVERTER OUTPUT SPEED AND RESPONSIVELY PRODUCE A TORQUE CONVERTER OUTPUT SPEED SIGNAL
310
CALCULATE A SECOND ESTIMATED VALUE OF THE TORQUE CONVERTER INPUT TORQUE AS A FUNCTION OF THE TORQUE CONVERTER OUTPUT TORQUE SIGNAL AND RESPONSIVELY PRODUCE A SECOND TORQUE CONVERTER INPUT TORQUE ESTIMATE SIGNAL
312
COMPARE THE FIRST AND SECOND TORQUE CONVERTER INPUT TORQUE ESTIMATE SIGNALS AND RESPONSIVELY CALIBRATE THE COMPUTER BASED MODEL
END

1. A method for estimating an attribute associated with a mobile machine, the machine having an engine and a powertrain, the powertrain having a torque converter coupled to the engine, including:

sensing a plurality of parameters of said machine and responsively producing a plurality of respective parameter signals;

calculating an estimated value of said attribute as a function of said parameter signals using a computer based model;

calculating a first estimated value of a torque converter input torque as a function of said parameter signals, and responsively producing a first torque converter input torque estimate signal;

measuring a torque converter output speed and responsively producing a torque converter output speed signal;

calculating a second estimated value of said torque converter input torque as a function of said torque converter output speed signal and responsively producing a second torque converter input torque estimate signal;

comparing said first and second torque converter input torque estimate signals and responsively calibrating said computer based model.

5,910,177

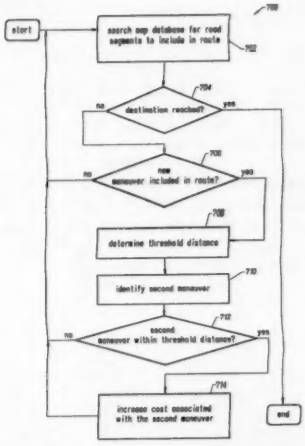
NAVIGATING CLOSE PROXIMITY ROUTES WITH A VEHICLE NAVIGATION SYSTEM

Gary Zuber, Santa Clara, Calif., assignor to Visteon Technologies, LLC, Dearborn, Mich.

Filed Dec. 9, 1996, Appl. No. 761,868

Int. Cl.[6] G01C *21/00;* **G06F** *165/00*

U.S. Cl. 701—202 **16 Claims**



1. A method for generating a route from a source location to a destination in a vehicle navigation system, the method comprising the steps of:

generating a first partial route from the source location to an end of the first partial route, the first partial route including a first maneuver;

determining whether a second maneuver is within a first distance from the first maneuver;

where the second maneuver is within the first distance, manipulating a parameter associated with the second maneuver; and

generating a second partial route from the end of the first partial route to the destination based at least in part on the parameter associated with the second maneuver.

5,910,178

METHOD FOR CONTROLLING A MESSAGE SEND IN A PACKET-SWITCHED INTERCONNECTION NETWORK

Sang Man Moh; Sang Seok Shin; Suk Han Yoon, and Kee Wook Rim, all of Daejon-Shi, DPR of Korea, assignors to Electronics And Telecommunications Research Institute, Daejon, DPR of Korea

Filed Jul. 24, 1997, Appl. No. 899,552

Claims priority, application DPR of Korea, Jul. 24, 1996, 96-29904

Int. Cl.[6] H04L *12/00;* **G06F** *15/16*

U.S. Cl. 709—232 **11 Claims**

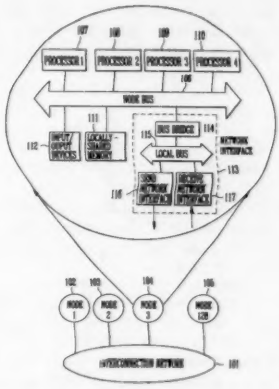
1. A method for controlling a message send in a packet-switched interconnection network, comprising the steps of:

(a) resetting a message send controller to an initial state;

(b) executing a control operation in accordance with a write bit setting by a message buffer control register in the initial state;

(c) checking an empty bit of the message buffer control register in the initial state and generating a message buffer control register result and enabling a timer in accordance with the message buffer control register result;

(d) checking a data message bit of a message transfer information register and generating a data message bit result, requesting a local bus controller to read data in accordance with the data message bit result, and requesting transfer of a packet to an output port controller;



(e) checking to determine whether a timeout from the timer has occurred and whether a transfer acknowledgement has arrived from a destination node in accordance with the timeout result and generating a transfer acknowledgement result;

(f) checking one of a data flag and a data transfer information receive acknowledgement in accordance with the transfer acknowledgement result;

(g) checking a transfer interrupt enable bit in accordance with the result of the data transfer information receive acknowledgement check and generating a transfer interrupt enable bit result;

(h) interrupting transfer to a processor in accordance with the transfer interrupt enable bit result; and

(i) executing a circular queue operation using the message buffer control register.

5,910,179

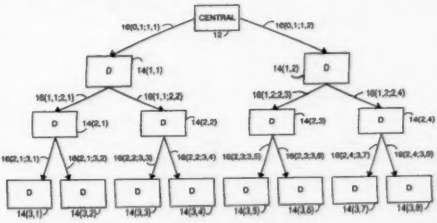
METHOD AND SYSTEM FOR TRANSMITTING DATA WITHIN A TREE STRUCTURE AND RECEIVING A CONFIRMATION OR STATUS THEREFOR

Ali Akbar Mohseni, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 25, 1996, Appl. No. 736,861

Int. Cl.[6] H04L *12/44*

U.S. Cl. 709—252 **8 Claims**



1. In a network of customer stations, including a computer controlled service center having apparatus for transmitting a set of data from the service center to a plurality of N customer stations where N is an integer, wherein each customer station of the network includes at least a receiver, a transmitter, and a storage, the improvement comprising:

(a) configuring means for establishing a tree structure including groups of customer stations and for establishing communication links thereamong, the tree structure including L tree levels where L is an integer,

(b) customer stations at each level n being connected in accordance with said tree structure to receive data signals from at least one customer station at a preceding level n−1 of the tree structure via respectively corresponding ones of said commu-

nication links and to transfer data signals to a set of B respective customer stations at a subsequent level n+1 of the tree structure via respectively corresponding ones of said communication links, where n=1, 2, . . . L−1, a level 0 is defined as a level including said service center, and B is an integer less than N;

(c) a transmitter of each customer station at level n of the tree structure being connected to receivers of a respective set of B customer stations at level n+1 of the tree structure for transmitting the set of data to receivers thereof;

(d) a receiver of each customer station at level n of the tree structure being connected to a transmitter of a respective customer station at level n−1 of the tree structure for receiving the set of data therefrom;

(i) said service center connected to a set of B customer stations at level 1 of the tree structure for transmitting the set of data to receivers thereof via respectively corresponding ones of said communication links,

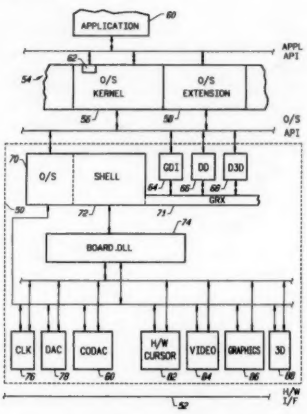
(ii) whereby the set of data is transmitted to said plurality of N customer stations with reduced involvement of said service center, which transmits the set of data only to said set of B customer stations at said level 1 of the tree structure and

(e) confirming means for transmitting confirmation signals whereby said service center receives a confirmation signal identifying each of said customer stations failing to receive the set of data transmitted thereto.

5,910,180
CONTEXT VIRTUALIZING DEVICE DRIVER ARCHITECTURE

Kevin J. Flory, Patterson, and James A. Keller, Santa Clara, both of Calif., assignors to Diamond Multimedia Systems, Inc., San Jose, Calif.

Filed Nov. 21, 1995, Appl. No. 561,360
Int. Cl.[6] G06F *3/14*
U.S. Cl. 709—301 **12 Claims**



1. A device driver providing for the management of persistent data objects within the memory space of a computer system substantially independent of the multitasking context state of an operating system executing on said computer system, said device driver comprising:

a) an upper interface layer presenting a call interface to an operating system, said upper interface layer providing for the creation of one or more data objects;

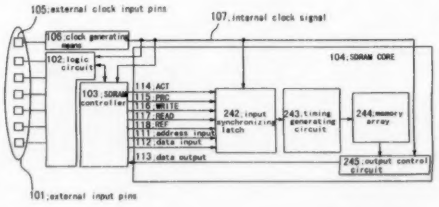
b) a lower interface layer presenting a hardware control interface to a programmable controller coupled to said computer system;

c) a device driver manager coupled to said upper and lower interface layers, said device driver manager providing for the management of one or more operating contexts of said device driver wherein each of said operating contexts is characterized by a persistent instantiation of said data objects maintained by said upper interface layer, said device driver manager providing for the controlled switching between said operating contexts whereby each said persistent instantiation of said data objects maintained by said upper interface layer establishes an operating context of said device driver that is independent of the context state of said operating system.

5,910,181
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE COMPRISING SYNCHRONOUS DRAM CORE AND LOGIC CIRCUIT INTEGRATED INTO A SINGLE CHIP AND METHOD OF TESTING THE SYNCHRONOUS DRAM CORE

Makoto Hatakenaka; Akira Yamazaki; Shigeki Tomishima, and Tadato Yamagata, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1997, Appl. No. 964,236
Claims priority, application Japan, Apr. 4, 1997, 9-086600
Int. Cl.[6] G06F *11/00*
U.S. Cl. 714—718 **9 Claims**



1. A semiconductor integrated circuit device comprising:

a logic circuit and a synchronous dynamic random access memory including a core unit, said logic circuit and said synchronous dynamic random access memory being integrated into a single semiconductor chip; and

a synchronous dynamic random access memory control circuit receiving external control signals for said synchronous dynamic random access memory from said logic circuit, and outputting signals to said core unit of said synchronous dynamic random access memory wherein the output signals from said synchronous dynamic random access memory control circuit are internal control signals for controlling said core unit of said synchronous dynamic random access memory.

5,910,182
DATA COMMUNICATIONS SYSTEMS AND METHODS USING INTERSPERSED ERROR DETECTION BITS

Paul W. Dent, Pittsboro, and Rajaram Ramesh, Cary, both of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed May 3, 1996, Appl. No. 642,056
Int. Cl.[6] G06F *11/10*
U.S. Cl. 714—786 **17 Claims**

1. A method of communicating data bits, comprising the steps of:

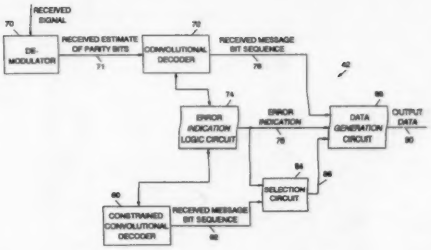
selecting from the data bits to be communicated a sequence of data bits to be convolutionally encoded together;

determining first error detection bits using a predetermined function;

interspersing the first error detection bits within the sequence of data bits in a plurality of predetermined spaced locations to provide a message;

convolutionally encoding the message to provide parity bits representing the encoded message for transmission;

transmitting the parity bits over a communications medium;



receiving estimates of the transmitted parity bits from the communications medium;

convolutionally decoding the estimates of the transmitted parity bits to provide a candidate bit sequence corresponding to the message;

determining second error detection bits from the candidate bit sequence based on the predetermined function; and

comparing the second error detection bits with the bits of the candidate bit sequence in locations corresponding to the predetermined locations of the first error detection bits to provide an error indication.

5,910,183

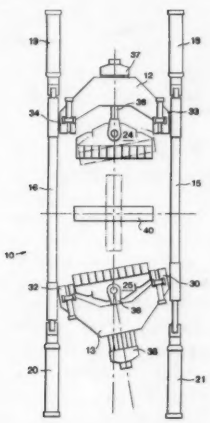
STRETCH-FORMING MACHINE WITH SERVO-CONTROLLED CURVING JAWS

Jesse Carl Ford, Tega Cay, S.C., and Larry Alexander Polen, Matthews, N.C., assignors to GEC Alsthom Cyril Bath, Monroe, N.C.

Filed Jan. 9, 1998, Appl. No. 5,334

Int. Cl.[6] B21D *11/02*

U.S. Cl. 72—21.5 **4 Claims**



1. In a stretch-forming machine of the type wherein a pair of opposed curving jaws grips opposing ends of a metal sheet to be stretch-formed in a curved configuration, each of said jaws being formed of an array of adjacent grippers movable relative to each other by respective hydraulic cylinders to define a part of the curve of the jaw, the improvement comprising a closed-loop servo-control means for moving each one of said grippers into a predetermined position relative to each other, each of said servo-control means comprising:

(a) a hydraulic cylinder position controller carried by the hydraulic cylinder of said one gripper for controlling hydraulic fluid flow to said hydraulic cylinder responsive to stored data representing the desired predetermined position of one of the grippers, said position controller comprising:

i. circuit means for summing a signal representing the desired predetermined position of one of the grippers and said signal representing the position of the hydraulic cylinder to said position controller and outputting a signal representative of any variance between the desired and actual position of said hydraulic cylinder; and

ii. valve means cooperating with blind and rod sides of said hydraulic cylinder for moving said hydraulic cylinder by hydraulic fluid flow;

(b) actuating driver means for actuating said position controller in response to the data received by said position controller to move said hydraulic cylinder; and

(c) hydraulic cylinder position feedback means positioned on said hydraulic cylinder for sensing the position of the hydraulic cylinder and communicating a signal representing the position of the hydraulic cylinder to said position controller.

5,910,184

METHOD OF MANUFACTURING HOT-ROLLED FLAT PRODUCTS

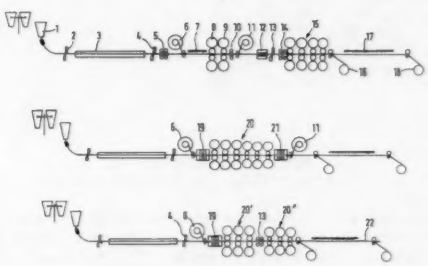
Günter Kneppe, Hilchenbach; Dieter Rosenthal, Niederfischbach, and Stephan Krämer, Hilchenbach, all of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Division of application No. 08/701,969, Aug. 23, 1996, Pat. No. 5,743,125. This application Aug. 7, 1997, Appl. No. 907,388.

Claims priority, application Germany, Sep. 6, 1995, 195 32 792; Oct. 14, 1995, 195 38 341

Int. Cl.[6] B21B *27/06;41/06*

U.S. Cl. 72—201 **4 Claims**



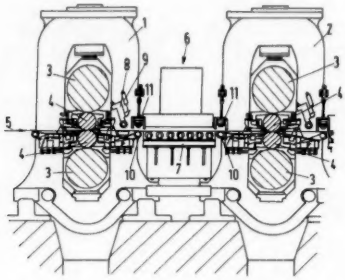
1. A method of manufacturing hot-rolled flat products from low alloy carbon steels in a production plant including a rolling train with a plurality of roll stands, a run-out table with devices for cooling the strip, and subsequently arranged coiling machines for coiling the strip, wherein at least a first of the roll stands of the rolling train is a reversing stand, at least one reeling furnace each being arranged in front of the reversing stand and following the reversing stand, and wherein a controllable cooling unit is arranged between the reversing stand and the reeling furnace in front of the reversing stand, the method comprising carrying out break-down rolling in a reversing operation to a thickness of 5–15 mm of the flat product at temperatures above the GOS line of the iron/carbon diagram, and subsequently carrying out finish-rolling of the flat product to a small final thickness after cooling of the product below the GPS line of the iron/carbon diagram.

5,910,185

DEVICE FOR THE GUIDANCE OF HOT-ROLLED STRIP THROUGH AN INDUCTOR

Dieter Figge, Essen, Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Jan. 16, 1996, Appl. No. 586,485
Claims priority, application Germany, Jan. 16, 1995, 195 02 071
Int. Cl.[6] B21B *27/06*
U.S. Cl. 72—202 **7 Claims**



1. A device for guiding hot-rolled strip in a travel direction through an inductor arranged between two adjacent roll stands of an induction heating device, comprising:

an inductor having induction coils that define an inductor space, the inductor being C-shaped so as to surround a top and bottom of the strip, the inductor also being divided in two transverse to the travel direction of the strip;

at least two guide rollers arranged on each side of the inductor in a travel plane of the strip which extends centrally through the inductor space between the induction coils, so as to guide the strip between the roll stands under controlled tension in a precise horizontal position within the inductor space so that a uniform heating of an entire cross-section of the strip occurs;

tension-measuring roller means responsive to force and arranged in front of the inductor and a first of the guide rollers for regulating tension of the strip; and

an additional guide roller arranged in the travel plane of the strip between the two parts of the inductor.

5,910,186

VEHICLE REPAIRING DEVICES

Bradley R. Weschler, 8 Longwood Dr., South Huntington, N.Y. 11746

Continuation-in-part of application No. 08/620,989, Mar. 22, 1996, Pat. No. 5,644,946, which is a continuation-in-part of application No. 08/401,764, Mar. 10, 1995, abandoned, and application No. 08/401,765, Mar. 10, 1995, abandoned. This application Jul. 7, 1997, Appl. No. 888,572.
This patent is subject to a terminal disclaimer
Int. Cl.[6] B21D *1/12*
U.S. Cl. 72—447 **22 Claims**

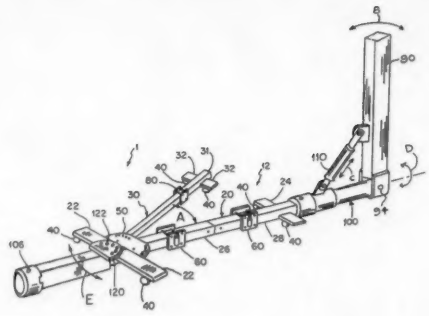
1. A device for straightening damaged unibodies of vehicles comprising:

a first elongated member which is selectively positionable under a damaged unibody of a vehicle while three wheels of the vehicle rest on the ground, said first elongated member comprising a first end and a second end;

a second elongated member selectively attachable to said first elongated member at an angle of less than 90 degrees;

two clamps slidably mounted on said first elongated member for attaching said first elongated member to pinch welds of said damaged unibody;

a clamp slidably mounted on said second elongated member for attaching said second elongated member to a pinch weld of said damaged unibody; and



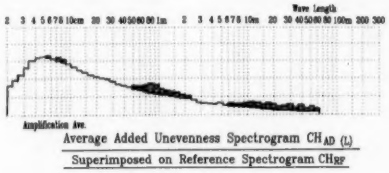
means for applying a pulling force selectively connectable to at least one of said first end and said second end of said first elongated member.

5,910,187

METHOD OF DETECTING YARN UNEVENNESS

Kazuhiko Okuda, and Hideki Oohata, both of Amagasaki, Japan, assignors to Keisokki Kogyo Co., Ltd., Amagasaki, Japan

Filed May 30, 1997, Appl. No. 866,221
Claims priority, application Japan, Jul. 2, 1996, 8-192876
Int. Cl.[6] G01N *27/00*
U.S. Cl. 73—160 **4 Claims**


Wave Length
Amplification Ave.
Average Added Unevenness Spectrogram CH AD (L)
Superimposed on Reference Spectrogram CHRF

1. A method of detecting uneven yarn components by taking plural samples from a yarn to be investigated, moving the samples, extracting signals proportional to variations of weights of the samples, analyzing the signals in terms of frequency or wavelength to produce signal components of different wavelengths indicative of any uneven yarn component, classifying the signal components into plural channels, and creating distinct spectrograms representing rates of variation of the signal components in terms of height of channel, said method comprising the steps:

obtaining k distinct spectrograms CH_n (n=1, 2, . . . , k) according to the number of said yarn samples;

averaging said k distinct spectrograms with respect to each signal component in each channel thereof to create an overall spectrogram CH_{OA} as one diagram which may contain defective unevenness common to all the samples;

averaging said overall spectrogram CH_{OA} in a manner averaging heights between adjacent channels thereof to create a realistic reference spectrogram CH_{RF} in which periodic defects have been removed from said overall spectrogram CH_{OA};

comparing said reference spectrogram CH_{RF} and said overall spectrogram CH_{OA} to find exceeding portions of the channels in the overall spectrogram CH_{OA}, said exceeding portions exceeding said reference spectrogram CH_{RF} in height; and

displaying these exceeding portions as an average added unevenness spectrogram CH_{AD}.

5,910,188

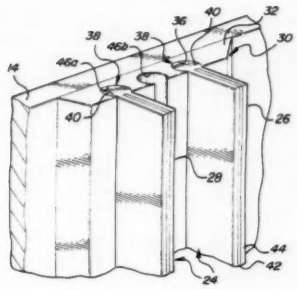
FLEXIBLE PROBE WITH SEPARATION ADJUSTMENT

Lawrence J. Resnick, Blue Bell, Pa., assignor to Triumph Controls, Inc., North Wales, Pa.

Filed Apr. 30, 1996, Appl. No. 641,194

Int. Cl.[6] G01F *23/28*

U.S. Cl. 73—290 R **8 Claims**



1. A measurement probe assembly (**16**) for insertion into a tank (**14**) to indicate the level of a substance (**12**) in the tank (**14**), said assembly comprising:

sensor means (**24**) for detecting a change in impedance in the substance (**12**);

said sensor means (**24**) comprising a first conductor (**26**) and a second conductor (**28**);

mounting means (**30**) connecting said sensor means (**24**) to a tank wall;

said mounting means (**30**) including connection means (**32**) for fixedly securing said first conductor (**26**) to the tank wall (**14**); and

said assembly characterized by said mounting means (**30**) including spacing means (**38**) for fixedly connecting said second conductor (**28**) at one of a plurality of predetermined distances from said first conductor (**26**) within the tank (**14**).

5,910,189

LIQUID LEVEL SENSOR

Kotaro Suzuki, Nishinomiya, and Kikuo Kainou, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP97/00942, § 371 Date Feb. 12, 1998, § 102(e) Date Feb. 12, 1998, PCT Pub. No. WO97/36153, PCT Pub. Date Oct. 2, 1997

PCT Filed Mar. 19, 1997, Appl. No. 945,883

Claims priority, application Japan, Mar. 28, 1996, 8-073521; Feb. 20, 1997, 9-035858

Int. Cl.[6] G09F *23/24;* **H01C** *1/02;* **G01K** *7/22*

U.S. Cl. 73—295 **7 Claims**

1. A liquid level detector comprising:

a metal case with an upper opening and a bottom having at least one through hole enabling the liquid to freely flow in and out of the metal case;

an element holder stored in the metal case;

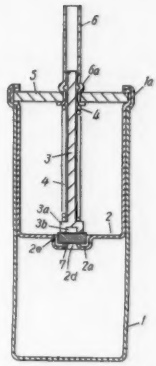
a thermistor having an electrode at opposing ends and placed on the element holder, a voltage being applied to said thermistor during detecting of said liquid level;

a terminal electrically coupled at one end with the thermistor;

a coil spring surrounding the terminal, for fixing the terminal to said thermistor;

a terminal member electrically coupled at one end with the other end of said terminal; and

an insulator at the upper opening for closing the upper opening of said metal case and including an aperture for holding the terminal member, wherein



during application of said voltage to said thermistor, a shift in height of said liquid level changes a resistance of said thermistor.

5,910,190

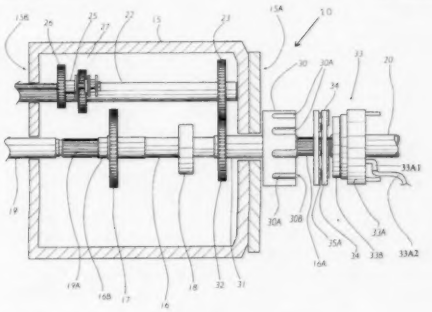
TRANSMISSION AND CLUTCH ASSEMBLY

Ernie Brookins, 913 W. Main Ave., West Fargo, N. Dak. 58078

Filed Dec. 4, 1997, Appl. No. 984,724

Int. Cl.[6] F16H *3/08*

U.S. Cl. 74—329 **20 Claims**



1. A transmission and clutch assembly comprising:

a casing;

a slidable input shaft relative to said casing, having an output gear mounted thereto;

an output shaft;

a countershaft rotatably disposed proximate to said input shaft and having first and second gears mounted thereto;

a reverse speed shaft rotatably disposed proximate to said input shaft and said countershaft and having a reverse gear mounted thereto for rotation therewith for reverse speed; and

a clutch means comprising a clutch housing, a clutch shaft, an input gear, first and second pressure members, and a throw-out bearing.

5,910,191

SHIFTING MECHANISM FOR OUTBOARD MOTOR

Yutaka Okamoto, Shizuoka, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

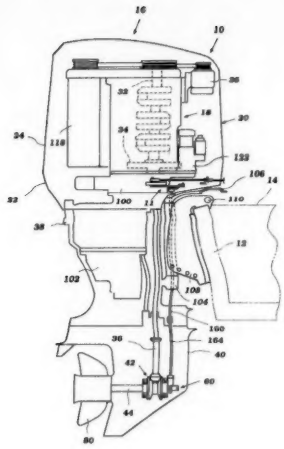
Filed Oct. 30, 1996, Appl. No. 741,050

Claims priority, application Japan, Oct. 30, 1995, 7-281595

Int. Cl.[6] G05G *11/00;* **B63H** *21/21*

U.S. Cl. 74—473.14 **32 Claims**

23. An outboard motor comprising a cowling and an engine including an output shaft which rotates about a vertical-extending



axis and a flywheel carried on a lower section of the output shaft at a lower end of the engine, the output shaft driving a propulsion device through a transmission which is intended to operate under at least two operational conditions, a transmission actuator cooperating with the transmission to selectively establish one of said at least two operational conditions of the transmission, and a shifting mechanism controlling the transmission actuator and includes an input element which is adapted to interact with and to operate between a remote operator and a shift control rod of the shifting mechanism, said input element of the shifting mechanism being positioned within the cowling and entirely below the level of the flywheel, said input element being movable relative to an axis that is generally normal to the vertically extending axis.

5,910,192

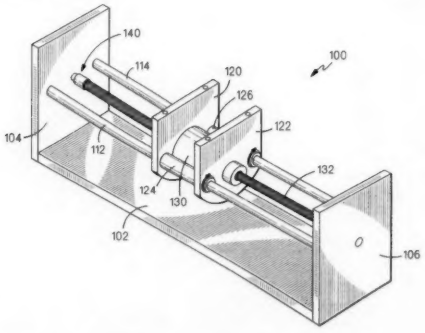
LOW-COST LINEAR POSITIONING DEVICE

Robert Pulford, Jr., Wolcott; Richard Donnelly, Wallingford, and Brian Peterson, Woodbury, all of Conn., assignors to Tri-Tech., Inc., Waterbury, Conn.

Continuation of application No. 08/586,608, Jan. 16, 1996, abandoned. This application Sep. 8, 1997, Appl. No. 925,189.

Int. Cl.[6] **G05G** *11/00*

U.S. Cl. 74—479.01 **7 Claims**



1. A linear positioning device, comprising:

(a) a frame member;

(b) an electric motor disposed to selectively move axially back and forth in said frame member;

(c) carriage means attached to said electric motor;

(d) means to guide said electric motor in axial movement and to prevent radial movement thereof; and

(e) a lead screw disposed between ends of said frame member, said lead screw being threadedly journaled in a rotor of said electric motor, such that internal rotation of said electric motor causes said axial movement, without the use of a lead nut external to said electric motor.

5,910,193

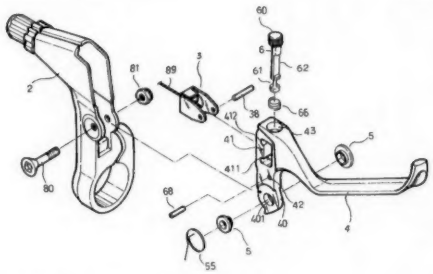
ADJUSTABLE BRAKE LEVER ASSEMBLY

Zen Ming Chen, Chang Hua Hsien, Taiwan, assignor to Tektro *Technology Corporation, Chang Hua, Taiwan*

Filed Aug. 13, 1997, Appl. No. 910,133

Int. Cl.[6] **G05G** *11/00;1/04;* **F16C** *1/10;1/22*

U.S. Cl. 74—489 **5 Claims**



1. A brake lever assembly comprising:

a base,

a handle including a lever pivotally coupled to said base at a pivot shaft, for allowing said handle and said lever to be rotated about said pivot shaft, said lever including a groove and at least two notches communicating with said groove,

a coupler including a rod slidably engaged in said groove of said lever and adapted to be engaged with either of said at least two notches, for securing a cable to said lever, and

a post rotatably engaged in said lever and engaged through said groove, said post including a notch adapted to be faced toward and away from said notches of said lever,

said rod being adapted to be stably retained in said notches of said lever when said notch of said post is faced away from said notches of said lever, and said rod being allowed to move into said groove and to move to engage with the other notch when said notch of said post is faced toward said notches of said lever, for allowing said handle to be adjusted to different moment of force.

5,910,194

VEHICLE BRAKE CABLE TENSION ADJUSTMENT APPARATUS

Won-bong Cho, Kyunggi-do, Rep. of Korea, assignor to Hyundai Motor Company, Kyunggi-do, Rep. of Korea

Filed Aug. 14, 1997, Appl. No. 911,033

Claims priority, application Rep. of Korea, Dec. 15, 1996, 95-41926

Int. Cl.[6] **B60T** *11/04;* **F16C** *1/22*

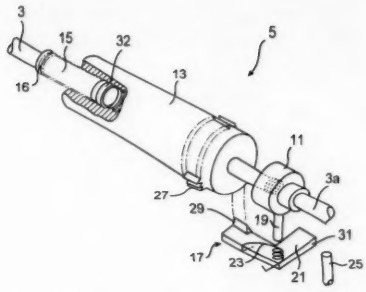
U.S. Cl. 74—500.5 **8 Claims**

1. A vehicle parking brake cable tension adjustment apparatus adapted for connection between a first parking brake cable portion extending from a brake lever and a second parking brake cable portion extending from a vehicle brake apparatus, comprising:

a first connecting member adapted for attachment in axial alignment to the first parking brake cable portion;

a first pivoting member connected to the first connecting member to pivot with respect to the first connecting member upon engagement with a fixed stop;

a second pivoting member axially aligned with said first connecting member and pivotally connected to the first connecting member;



a mechanical linkage linking the first pivoting member to the second pivoting member, configured so that the second pivoting member pivots only when the first pivoting member pivots upon engagement with the stop; and

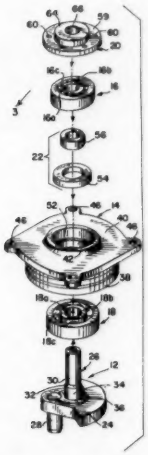
a second connecting member having two ends and being axially aligned with the first connecting member and the second pivoting member, the first end being pivotally connected to the second pivoting member, and the second end being attachable to the second parking brake cable portion extending from the vehicle brake apparatus.

5,910,195

BEARING SPACER AND CRANKSHAFT SEAL FOR END CAP ASSEMBLY OF AIR COMPRESSOR

Lance W. Ziemer, Oakfield, and Kenneth W. Kujawski, Allenton, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed May 23, 1997, Appl. No. 862,733
Int. Cl.[6] F16C *3/04*
U.S. Cl. 74—603 **11 Claims**



1. In an end cap assembly, the assembly comprising:

a crankshaft structure having a shaft;

an end cap disposed around the shaft;

an upper set of ball bearings mounted in the end cap for disposition about the shaft;

a lower set of ball bearings mounted in the end cap and spaced below the upper set of ball bearings for disposition about the shaft; and

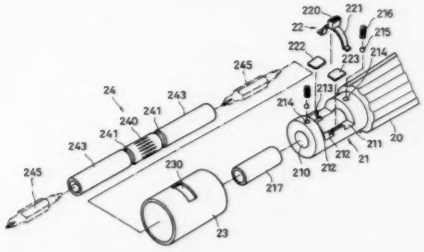
a seal and spacer arrangement positioned about the shaft between the upper set of ball bearings and the lower set of ball bearings, wherein the seal and spacer arrangement comprises a cylindrical ring surrounded by a reinforced sealing member, wherein each of the upper and lower sets of ball bearings has a cylindrical inner race and a cylindrical outer race, the inner races of the upper and lower sets of ball bearings being separated by the seal and spacer arrangement, and the outer races of the upper and lower sets of ball bearings being separated by internal structure formed in the end cap.

5,910,196

REVERSIBLE RATCHET SCREWDRIVER

Chiu-Tong Huang, 9/F., No. 752-8, Wen-Hsin Rd., Sec. 4, Taichung City, Taiwan

Filed Feb. 12, 1998, Appl. No. 22,481
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—60 **3 Claims**



1. A reversible ratchet screwdriver comprising:

a handle having a control head at one end, said control head comprising a radial open chamber, an axial center hole piercing through said radial open chamber, two receiving holes at two opposite sides of said radial open chamber, two notches respectively disposed adjacent to said receiving holes, two radial holes respectively disposed at front and rear sides of said radial open chamber;

a shell mounted around said control head on said handle, said shell having a transverse sliding slot;

a shank inserted into the axial center hole on said control head, said shank having a ratchet on the middle, two tubular coupling portions respectively disposed at two opposite ends and holding a respective bit for turning screws, and two annular grooves around the periphery at two sides of said ratchet;

two steel balls respectively mounted in the radial holes on said control head;

two springs respectively mounted in the radial holes on said control head and connected between an inside wall of said shell and said steel balls, said springs imparting a downward pressure to said steel balls, causing said steel balls to be retained in engagement with the annular grooves on said shank;

a first stop plate and a second stop plate respectively mounted in the receiving holes on said control head and forced into engagement with the ratchet on said shank at two sides;

a ratchet shifter having a knob extending out of the transverse sliding slot on said shell, and two pressure arms respectively pressed on said first stop plate and said second stop plate, said ratchet shifter being shifted to a right position where said first stop plate is retained in engagement with the ratchet on said shank and said second stop plate is tilted in one notch on said control head and disengaged from the ratchet on said shaft, enabling said shank to be rotated clockwise in the axial hole on said control head and prohibiting said shank from being rotated counter-clockwise in the axial hole on said control head, a left position where said second stop plate is retained in engagement with the ratchet on said shank and said first stop plate is tilted in one notch on said control head and disengaged from the ratchet on said shaft, enabling said shank to be rotated counter-clockwise in the axial hole on said control

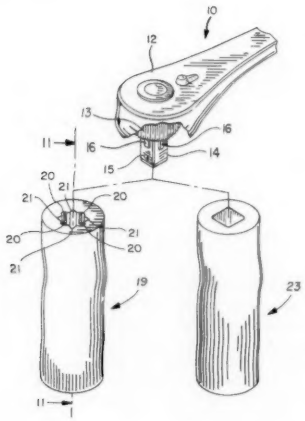
head and prohibiting said shank from being rotated clockwise in the axial hole on said control head, or a middle position where said first stop plate and said second stop plate are retained in engagement with the ratchet on said shank to stop said shank from rotary motion relative to said control head.

5,910,197

WRENCH WITH SUPPLEMENTARY DRIVING LUGS FORMED ON ITS SQUARE CROSS-SECTIONED DRIVE TANG AND INTERCHANGEABLE SOCKETS THEREFOR

Peter Constantine Chaconas, Glyndon, Md., assignor to Hand Tool Design Corporation, Wilmington, Del.

Filed Jul. 30, 1997, Appl. No. 902,934
Int. Cl.[6] B25B *13/00;23/16;13/46*
U.S. Cl. 81—124.6 **4 Claims**



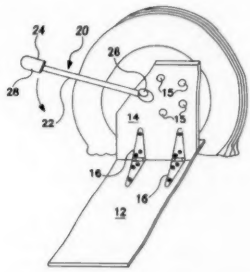
1. In combination, a modified ratchet wrench and a modified wrench socket, wherein the modified ratchet wrench may be used with a conventional socket, and wherein the modified wrench socket may be used with a conventional ratchet, comprising a drive tang on the modified ratchet wrench, the drive tang having a first portion adjacent to the modified ratchet wrench and further having a second portion extending from the first portion to the end of the drive tang, at least one supplementary driving lug carried only by *the first portion of the drive tang and extending radially therefrom,* such that the supplementary driving lug does not extend the full length of the drive tang, the modified wrench socket having an *opening receiving the drive tang and complementary thereto to* effect torque transmission therebetween, the modified wrench socket having a top portion and further having at least one internal pocket extending axially from the top portion of the modified wrench socket and radially of the opening formed therein to receive the supplementary driving lug on the drive tang of the *modified ratchet wrench; such that when the modified ratchet* wrench is engaged with the modified wrench socket, the drive is through both the drive tang and the supplementary driving lug on *the drive tang; thereby accommodating increased leverage on the* modified ratchet wrench, preventing slippage between the modified ratchet wrench and the modified wrench socket, and precluding premature failure of the drive tang; and such that when the modified ratchet wrench is engaged with a conventional socket, the drive is only through the drive tang and the supplementary driving lug extends above the conventional socket; *and such that when a* conventional ratchet is engaged with the modified wrench socket, the drive is only through the drive tang of the conventional ratchet, and there is no engagement with the internal pocket in the modified wrench socket.

5,910,198

LUG NUT REMOVAL AND TIGHTENING TOOL

Daniel J. Maher, and Billie Jo Maher, both of 1034 Lawrence Ct., Girard, Pa. 16417

Filed Aug. 1, 1997, Appl. No. 904,463
Int. Cl.[6] B25B *23/00*
U.S. Cl. 81—462 **2 Claims**



1. A lug nut removal and tightening device which comprises:
a linear supporting base plate,
a movable plate secured to an upper surface of said supporting base plate near one end thereof and adapted to be moved to a vertical upright position,
a two-piece hinge, one piece of said hinge being secured to an upper surface of said supporting base plate, another piece of said hinge secured to one surface of said movable plate near an end thereof for movement of said movable plate from a horizontal position substantially parallel with said upper surface of said supporting base plate to a vertical position substantially perpendicular with said supporting base plate,
said movable plate including a plurality of apertures of a same size arranged in a circular pattern for alignment with different lug nuts on an automobile wheel,
a linear leverage bar including a drive means on a drive end thereof,
a linear socket-type extension,
said linear socket-type extension having a socket end that fits the lug nuts on said vehicle and a drive end for receiving said drive means on one end of said leverage bar,
said drive end of said socket-type extension having a diameter which fits within one each of said apertures in said movable plate, is rotatable within said aperture and supported by said moveable plate,
said drive means on the drive end of said leverage bar is inserted into said drive end of said socket-type extension on a side of said support means opposite from said wheel and said leverage bar is rotated in a vertical plane to rotate said socket-type extension to loosen or tighten said lug nut.

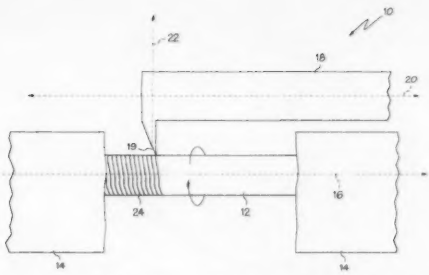
5,910,199

METHOD AND APPARATUS FOR FAST THREADING PULLOUT IN A NUMERICALLY CONTROLLED THREADING APPLICATION

Rickey L. Busick, Lebanon, and Mark F. Steinmetz, Wilmington, both of Ohio, assignors to Vickers, Incorporated, Maumee, Ohio

Filed Feb. 26, 1997, Appl. No. 805,506
Int. Cl.[6] B23B *5/24*
U.S. Cl. 82—1.11 **20 Claims**

1. A method for use with a numerically controlled threading machine for decreasing the time for pullout of a machine member from a thread on a workpiece, the method comprising the steps of:
receiving position command signals for determining com*manded movement of the machine member along a pullout* axis;
applying a first velocity signal to the machine member based on the commanded movement for driving the machine member along the pullout axis; and



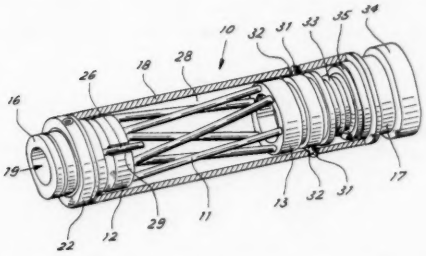
applying a supplemental velocity signal to the machine member along the pullout axis when the commanded movement reaches a selected position on the thread to generate an accelerated pullout movement of the machine member along the pullout axis, wherein the supplemental velocity signal is applied in addition to the first velocitv signal.

5,910,200

CENTERING DEVICE FOR BARS IN AUTOMATIC *MAGAZINES AND MAGAZINE FOR USE THEREWITH*

Pietro Cucchi, Bussero, Italy, assignor to Pietro Cucchi S.p.A., Italy

Filed Jul. 11, 1997, Appl. No. 890,747
Claims priority, application Italy, Jul. 24, 1996, MI96A1550
Int. Cl.[6] B23B *13/10*
U.S. Cl. 82—126 **12 Claims**



1. A support and centering device for a cylindrical bar fed to a bar magazine for lathes, comprising a plurality of rods extending between and supported at opposite ends thereof by first and second support elements disposed in spaced, confronting relation to each other, the rods being disposed to form a passageway for said bar internally of the plurality of rods, the support elements being mutually rotatable about the passageway axis, adjusting means operable to adjust the mutual position of said elements so as to cause tilting of the rods relative to said axis and thus to set the minimum diameter of such a passageway, and resilient means operative to cause said rods to be tilted resiliently in a direction to enlarge the diameter of said passageway when an item larger than said minimum diameter is fed through said passageway.

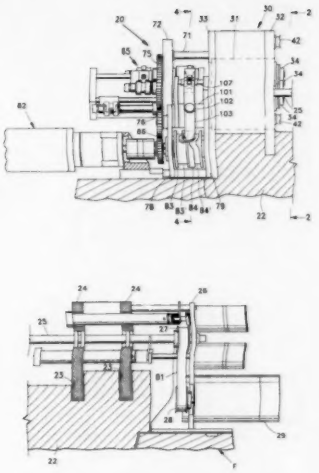
5,910,201

MULTIPLE SPINDLE SCREW MACHINE

Patrick Muscarella; Gary A. Quinter, both of Penfield; David R. Toland, Brockport, and James Hugick, Rochester, all of N.Y., assignors to Dover Industries, Inc., Rochester, N.Y.

Filed Sep. 9, 1997, Appl. No. 925,861
Int. Cl.[6] B23B *13/04*
U.S. Cl. 82—129 **11 Claims**

1. In a multiple spindle screw machine having a frame, a spindle drive shaft mounted on the frame for rotation about a stationary



axis, a spindle supporting head mounted on the frame for indexible rotation coaxially about said drive shaft, and a plurality of tubular work-supporting spindles mounted intermediate their ends in said head for rotation therewith and for rotation relative thereto by said drive shaft about spaced, parallel axes radially spaced from and angularly spaced about said drive shaft, the improvement comprising

head indexing means including a first servo motor operable intermittently to rotate said head about said drive shaft, *thereby to rotate said spindles successively into different* angular positions about the axis of said shaft,

locking means mounted for limited movement on said head between a first position in which said head is fixed against rotation relative to said drive shaft, and a second position in which the head is released for rotation by said indexing means,

means for shifting said locking means from said first position to said second position just prior to each operation of said first *servo motor,*

said locking means including a first ring secured to and surrounding said head adjacent said one end thereof,

said second ring surrounding said first ring coaxially thereof and being fixed to said frame, and

a third ring surrounding said head coaxially thereof in confronting relation to said first and second rings and for limited axial movement on said head toward and away from said first and second rings to first and second limit positions, respectively, *and*

means on said third ring engagable with cooperating means on said first and second rings to lock said head against rotation upon movement of said third ring to said first limit position, and operative to become disengaged from said cooperating means upon movement of said third ring to its second limit position, thereby to release said head for rotation by said indexing means.

5,910,202

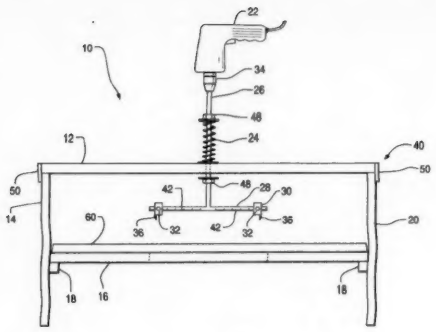
ROTARY CUTTER

Frank DeMarc, 156 Hardenburg La., East Brunswick, N.J. 08816

Filed Jan. 31, 1997, Appl. No. 792,558
Int. Cl.[6] B26D *3/10*
U.S. Cl. 83—522.15 **2 Claims**

1. A rotary cutting device for cutting apertures in acoustical ceiling tile comprising:

a housing assembly including:



a flat bottom member having a workpiece support surface thereon,

two vertical side walls, and

a mounting assembly comprising a metal bar,

wherein the metal bar is attached to a top surface of each of said vertical side walls, wherein said bottom member is supported on said side walls, and

wherein said side walls extend upwardly and downwardly from said bottom member;

rotary cutter means mounted on said housing assembly, said rotary cutter means including:

a rotor shaft extending through said metal bar,

two blade arms carried by said rotor shaft and extending radially outward therefrom, said blade arms being disposed within said housing assembly,

a collar slidably mounted on each blade arm,

means for fixing each of said collars in position on the respective blade arm,

a cutting blade mounted on each of said collars, the cutting blades being disposed within said housing assembly,

a drill connected to said rotor shaft for imparting rotational movement thereto,

a first retaining means on said rotor shaft above said metal bar, and

a second retaining means on said rotor shaft below said metal bar and spaced above said blade arms; and

a spring mounted on said rotor shaft between said metal bar and said first retaining means;

whereby said spring axially biases said rotor shaft upward so that said blade arms advance into cutting engagement with said ceiling tile by applying downward pressure to said rotary cutting means and compressing said spring, and said spring returns said blade arms to a position of non-cutting engagement upon releasing said downward pressure at the completion of the cutting operation.

5,910,203

WIRE SAWING DEVICE

Charles Hauser, Genolier, Switzerland, assignor to HCT Shaping Systems SA, Cheseaux, Switzerland

Filed Feb. 5, 1997, Appl. No. 796,108

Claims priority, application Switzerland, Feb. 6, 1996, 303/96

Int. Cl.[6] B26D *1/44*

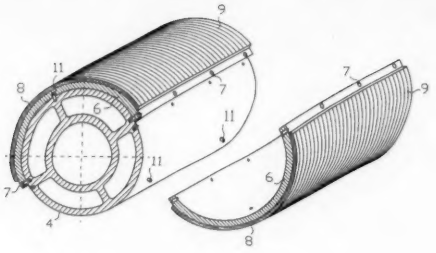
U.S. Cl. 83—651.1 **11 Claims**

1. A wire sawing device comprising:

a frame;

at least two wire guide cylinders,

each of said cylinders comprising a central cylindrical part rotatably supported at each of its axial ends by said frame, and at least two removable surface segments having grooves in an exterior surface which define intervals for sawing, said surface segments being removably affixed to said central part by



securement means that are in recesses in an outer cylindrical surface of the respective one of said wire guide cylinders,

wherein said recesses extend longitudinally parallel to respective axes of said cylinders.

5,910,204

METHOD FOR THE PRODUCTION OF PACKING FOR STUFFING BOXES

Sergio Carrara, Via Vecchi, 7 - 24060 Adrara S. Martino, Bergamo, Italy

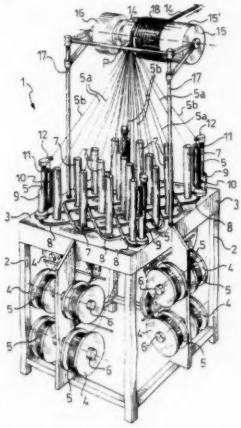
PCT No. PCT/EP96/01045, § 371 Date Sep. 18, 1997, § 102(e) Date Sep. 18, 1997, PCT Pub. No. WO96/29455, PCT Pub. Date Sep. 26, 1996

PCT Filed Mar. 12, 1996, Appl. No. 913,676

Claims priority, application Italy, Mar. 20, 1995, MI95A0544 U

Int. Cl.[6] D04C *3/48*

U.S. Cl. 87—31 **6 Claims**



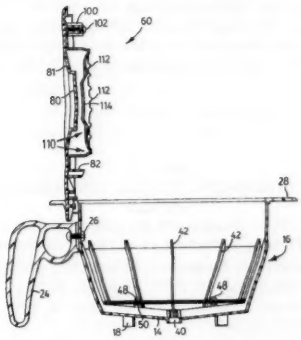
5. A machine (**1**) for the manufacture of braided packing for stuffing boxes including a plurality of reels (**4**) of elementary yarns (**5***a*) rotatably engaged on respective fixed pins (**6**) and a plurality of spools (**10**) of elementary yarns (**5***b*) rotatably engaged on respective movable elements (**9**), the elementary yarns (**5***a*, **5***b*) of the reels (**4**) and the spools (**10**) converging to an assembly point (P) so as to form a packing (**14**), characterised in that the assembly point (P) is located on the surface (**15'**) of a roll (**15**) of the machine (**1**) which is rotated.

5,910,205

BREW BASKET FOR COFFEE-MAKING MACHINE

Dahyabhai U. Patel, Vancouver, Canada, assignor to Cafe 98 Industries Limited, Canada

Filed Jul. 24, 1997, Appl. No. 899,894
Int. Cl.[6] A47J *31/04*
U.S. Cl. 99—315 **26 Claims**



1. A brew basket to hold ground coffee through which water is to pass, comprising:

a basket member to support a bed of ground coffee and having at least one opening therein to permit the egress of water having passed through said bed of ground coffee; and

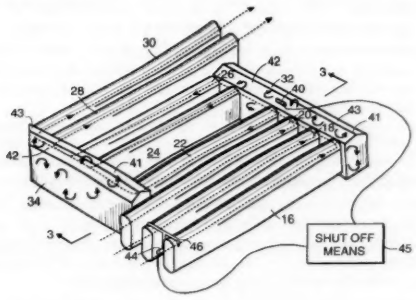
a pan above said bed of ground coffee to collect water entering said brew basket, said pan including a base having a plurality of wells formed therein and having a plurality of spaced holes provided therethrough at said wells to distribute collected water generally uniformly over said bed of ground coffee, said wells being configured to provide sufficient head for water collected by said pan to achieve generally even flow of water through said holes.

5,910,206

DRY FIRE LIMITING DEVICE FOR DEEP FRYER

Albert Charles McNamara, San Antonio, Tex., assignor to AFC Enterprises, Inc., Atlanta, Ga.

Filed Nov. 13, 1998, Appl. No. 191,698
Int. Cl.[6] A47J *37/12*
U.S. Cl. 99—330 **14 Claims**



1. A fryer system comprising, in combination:

a fryer including a vat for containing shortening therein;

a heating means supplying heat to the vat;

a plurality of heat transfer conduits, each conduit having an upper surface, an inlet end and an outlet end;

at least one mixing plenum, each mixing plenum having an upper surface, at least one inlet opening, each inlet opening sealingly connected to an outlet end of one of the heat transfer conduits, and at least one outlet opening, each outlet opening sealingly connected to an inlet end of one of the heat transfer conduits, the upper surface of the at least one mixing plenum being above the upper surface of each of the plurality of heat transfer conduits;

a heat sensor positioned on the upper surface of one of the mixing plenums; and

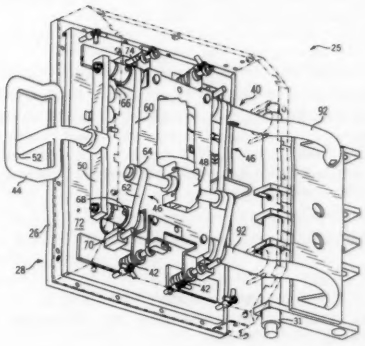
a means for deactivating the heating means when the heat sensor detects a predetermined temperature.

5,910,207

CLAMSHELL COOKING APPARATUS HAVING AN ELECTRONIC GAP ADJUSTMENT MECHANISM

Robert K. Newton, Beloit, and Mark T. Erickson, Sun Prairie, *both of Wis., assignors to Taylor Company, Auroria, Ill.*

Continuation-in-part of application No. 08/843,770, Apr. 21, 1997, Pat. No. 5,791,234. This application Jul. 22, 1998, Appl. No. 120,787.
This patent is subject to a terminal disclaimer
Int. Cl.[6] A47J *27/62;37/06*
U.S. Cl. 99—349 **20 Claims**



1. A clamshell cooking system, comprising:

a support structure;

a lower cooking platen assembly having a top cooking surface, the lower cooking platen assembly being attached to the support structure;

a platen support arm pivotally mounted on the support structure, the platen support arm being movable to a first position and a second position;

an upper cooking platen assembly coupled to the platen support arm and having a bottom cooking surface, the top cooking surface and the bottom cooking surface being separated by a gap when the platen support arm is in the first position; and

an electronic gap adjustment assembly coupled to the upper platen assembly, the electronic gap adjustment assembly adjusting the gap between the top cooking surface and the bottom cooking surface, the electronic gap adjustment assembly including a stepper motor.

5,910,208

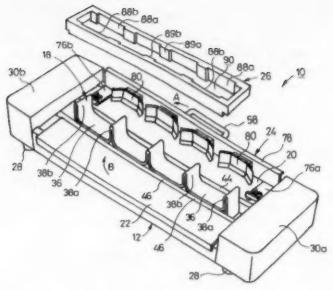
BOILED RICE-SHAPING APPARATUS

Hiroshi Ono, Hachioji, Japan, assignor to Chiba and Associates, Tokyo, Japan

Filed Oct. 27, 1998, Appl. No. 179,396
Int. Cl.[6] A21C *3/06;* **A23C** *9/00;* **A23P** *1/00;* **A47J** *43/20*
U.S. Cl. 99—353 **12 Claims**

1. A boiled rice-shaping apparatus comprising:

a bottom section;



a first side plate which is provided in an upstanding manner on said bottom section;

a second side plate which is provided in an upstanding manner on said bottom section and which is capable of making relative approach and separation with respect to said first side plate; and

a lid member which is capable of making approach and separation with respect to said bottom section in a direction perpendicular to relative displacement directions of said first side plate and said second side plate, wherein:

boiled rice is charged in a chamber which is formed by said bottom section, said first side plate, and said second side plate, said first side plate and said second side plate are allowed to make approach to one another to press and compress said boiled rice in a widthwise direction, and said lid member is allowed to make approach to said bottom section to press and compress said boiled rice in a vertical direction so that said boiled rice having been shaped to have a predetermined shape is obtained.

5,910,209

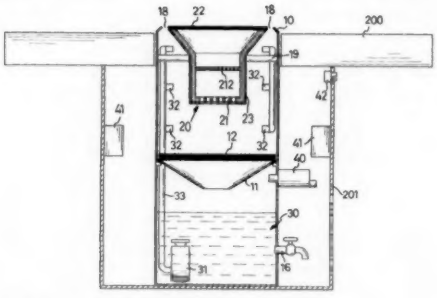
SMOKELESS BARBECUE DEVICE

Mong-Yu Lee, No. 182, Chienfeng Rd. Kangshan Chen, Kaohsiung Hsien, Taiwan

Filed Jan. 16, 1998, Appl. No. 8,208

Int. Cl.[6] **A47J** *37/00;37/04;37/07*

U.S. Cl. 99—450 **8 Claims**



1. A smokeless barbecue device comprising:

a casing having an open top within which a food processing means is fixedly disposed;

a water tank disposed below said food processing means and having a pump connected thereto, at least one pipe extending from said pump and having a plurality of sprays disposed thereto so that water in said water tank is sprayed from said sprays via said pipe, a valve means disposed to said water tank;

a meshed member transversely disposed in said casing and located below said food processing means, said sprays located above said meshed member, and

at least one ventilator disposed to said casing and a funnel member extending from an underside of said meshed member, and said at least one ventilator located below said funnel member.

5,910,210

DEVICE FOR INSTITUTIONAL DISTRIBUTION OF MEALS

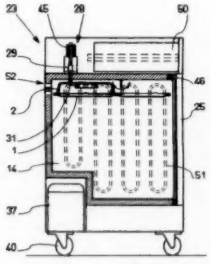
Jean-Charles Violi; Raymond Violi, both of Marlens, and Jean-Francois Ferbus, Seythenex, all of France, assignors to Societe Cooperative de Production Bourgeois, Faverges, France

Filed May 15, 1998, Appl. No. 80,123

Claims priority, application France, May 16, 1997, 97 06359; Aug. 4, 1997, 97 10181

Int. Cl.[6] **A47J** *39/02;* **A47B** *31/02;* **H05B** *5/08;6/02*

U.S. Cl. 99—483 **20 Claims**



1. A device for storing and packaging prepared foods on transportable trays having a first part adapted to be covered by a removable insulative cloche for foods intended to be eaten hot, comprising:

a closed enclosure delimited by a thermally insulative peripheral wall having an access door and shaped to contain and to support said trays with their insulative cloche,

a refrigerator unit adapted to maintain said enclosure at an appropriate refrigeration temperature for storage of said food,

a heat source housed in said inside face of said cloche and/or said first part of said tray and adapted selectively to heat the interior space between said cloche and said tray and said food that it contains, and

transmission means for transmitting to said heat source energy from an external energy supply provided with control means to assure programmed heating of said interior space and said food that it contains shortly before said food is eaten,

wherein the dimensions and the shape of said enclosure are such that it can contain and support only one or two meal trays with their insulative cloche, constituting an individual meal refrigering and heating unit placed in the immediate proximity of the user so as to be directly accessible by said user at meal times.

5,910,211

INK FOR INK-JET RECORDING CONTAINING ALKYLENE OXIDE ADDUCT OF ACETYLENE GLYCOL

Takamasa Ueda, Ibaraki; Toshiya Natsuhara, Takarazuka; Masaki Asano, and Hideo Hotomi, both of Nishinomiya, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Sep. 29, 1997, Appl. No. 939,711

Claims priority, application Japan, Oct. 1, 1996, 8-260605; Oct. 1, 1996, 8-260608; Oct. 1, 1996, 8-260615

Int. Cl.[6] C09D *11/02*

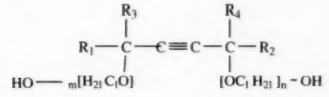
U.S. Cl. 106—31.43 37 Claims

1. An ink for ink-jetting, comprising:

0.5–10% by weight of a coloring material,

0.01–5.0% by weight of alkylene oxide adduct of acetylene glycol, represented by the formula (A):

(A)



(in which R_1–R_4 are respectively an lower alkyl group; "l" is an integer of 2 or 3; and m and n are respectively an integer of 1 or more);

2–8% by weight of polyethyleneimine; and water,

% by weight being based on total weight of the ink.

5,910,212

PROCESS FOR PREPARING AN OPEN-GRADED ASPHALT COMPOSITION

Henricus Engelbertus Johannes Hendriks, and Dirk Adriaan Stoker, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 14, 1998, Appl. No. 59,746

Claims priority, application European Pat. Off., Apr. 21, 1997, 97302702

Int. Cl.[6] C09D *195/00*

U.S. Cl. 106—281.1 7 Claims

1. Process for preparing an open-graded asphalt composition which comprises adding a hard binder component having a penetration of less than 50 dmm to a mixture of a non-emulsified soft binder component having a viscosity of less than 300 mPa.s (at 100° C.) and aggregate at a temperature of less than 140° C.

5,910,213

TREATED TITANIUM DIOXIDE

Steven Hugh Ashdown, Darlington; Robert McIntyre, Durham, and Neil Martin Richmond, Darlington, all of United Kingdom, assignors to Tioxide Group Services Limited, London, United Kingdom

Filed Jul. 31, 1997, Appl. No. 903,981

Claims priority, application United Kingdom, Aug. 15, 1996, 9617163

Int. Cl.[6] C09C *1/36;3/10*

U.S. Cl. 106—436 20 Claims

1. A pigmentary material comprising a particulate titanium dioxide, the particles of which have been treated with an effective stabilising amount of a polymeric hindered amine stabiliser which comprises a polymer having a main chain substantially free of acidic groups and having stabilising groups, said stabilising groups being hindered amines and said stabilising groups comprising at least 35 per cent by weight of the polymer.

5,910,214

PROCESS FOR PREPARING CALCIUM CARBONATE

Kyu Jae You, 48, Nackdong-ri, Nam-myon, Jungsun-kun, Kangwon-do, Rep. of Korea

Filed Sep. 8, 1997, Appl. No. 927,570

Claims priority, application Rep. of Korea, Sep. 11, 1996, 96-39234

Int. Cl.[6] C09C *1/02;* C01F *5/24*

U.S. Cl. 106—465 2 Claims

1. A process for preparing calcium carbonate having an average particle size in the range of 0.3±0.1 μm, the process comprising the steps of:

(a) introducing a gas containing 20 to 40% by weight of carbon dioxide into an aqueous suspension of calcium hydroxide having a concentration of 6 to 10% by weight and a temperature of 20° C. to 30° C., at a flow rate of 50 to 100 liters per minute per kg of the calcium hydroxide, to prepare a suspension containing light calcium carbonate particles having an average size of 0.6±0.4 μm;

(b) dehydrating the suspension from step (a) and then subjecting it to drying and pulverizing to prepare dry powders thereof;

(c) admixing the light calcium carbonate powders with 0.5 to 1.0 part by weight of a dispersing agent comprising sodium polyacrylate and a sodium salt of a copolymer of acrylic acid and maleic acid, per 100 parts by weight of the light calcium carbonate powders, such that a slurry showing a thixotropic property is obtained, the polymerization ratio of the acrylic acid and the maleic acid in the copolymer being in the range of 1:0.5 to 1:1.5; and

(d) wet grinding the slurry from step (c) in a sand mill.

5,910,215

SELF-LEVELING FLUID MORTAR INCLUDING CALCIUM SULFATE AND LIME

Laurent Frouin, L'Hay-les-Roses, and Mustapha Sari, Villeurbanne, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

PCT No. PCT/FR95/01758, § 371 Date Jun. 27, 1997, § 102(e) Date Jun. 27, 1997, PCT Pub. No. WO96/20901, PCT Pub. Date Jul. 11, 1996

PCT Filed Dec. 29, 1995, Appl. No. 860,137

Claims priority, application France, Dec. 30, 1994, 94 16038

Int. Cl.[6] C04B *11/06*

U.S. Cl. 106—772 22 Claims

1. A self-leveling fluid mortar comprising anhydrite calcium sulfate or α-hemihydrate calcium sulfate, aggregates, lime, water and either: (1) one or more precipitated silicas or pyrogenic silicas and one or more compounds containing reactive alumina; or (2) one or more amorphous pozzolans having a BET surface area between 5 and 20 g/m^2 and selected from the group consisting of meta-kaolin, calcined clay, vegetable ash, and amorphous volcanic ash, the weight content of either component (1) or component (2), relative to the weight of calcium sulfate, being between 2 and 10%.

5,910,216

CRYSTAL HOLDING APPARATUS

Yasushi Nakamura, and Seiichiro Otsuka, both of Tomioka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1997, Appl. No. 916,155

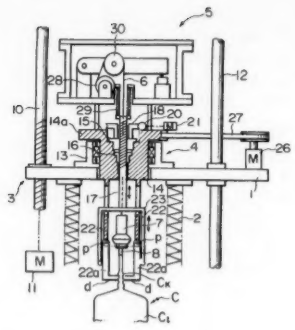
Claims priority, application Japan, Sep. 18, 1996, 8-267806

Int. Cl.[6] C30B *35/00*

U.S. Cl. 117—218 16 Claims

1. A crystal holding apparatus for holding a corrugated portion between a seed crystal and a straight cylindrical portion of a crystal during a single-crystal growing process wherein the seed crystal is brought into contact with a material melt of a material and is subsequently pulled while being rotated, said crystal holding apparatus comprising:

a lifting jig for holding the corrugated portion of the crystal;



a swinging portion provided at a tip end portion of said lifting jig, said swinging portion having a short stroke and being adapted to swing so as to hold or to release the corrugated portion during pulling of the crystal; and

a lock mechanism which swings the swinging portion for opening and closing operation of the swinging portion and which locks the swinging portion.

5,910,217

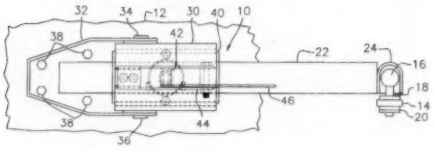
CAM ACTUATED APPARATUS FOR FRICTIONALLY CONTROLLING TRAILER SWAY

Frank T. Sargent, 5433 Brandy Cir., Fort Myers, Fla. 33919

Filed Feb. 18, 1998, Appl. No. 25,224

Int. Cl.[6] B60T *7/20*

U.S. Cl. 118—112 A **20 Claims**



1. A cam actuated apparatus for frictionally controlling the sway of a trailer, said apparatus comprising;

a support frame mounted to the trailer and accommodating an elongate sway bar, which pivotally engages and extends generally rearwardly from a ball mount on a standard trailer hitch;

a brake assembly mounted to said support frame and including first and second brake components sandwiched about the sway bar, said brake components being mounted so as to be selectively compressible and separable with respect to one another and the sway bar;

a cam element;

means for mounting said cam element to said support frame such that said cam element is axially pivotable;

means for pivotally driving said cam element into a selected one of a plurality of pivot positions; and

resilient biasing means interengaging said cam element and said brake assembly and being responsive to pivoting of said cam element into a selected pivot position for applying a corresponding degree of compressive force to said first and second brake components, whereby frictional interengagement between said brake components and the sway bar may be adjusted, said brake assembly further including spring means disposed between said first and second brake components for urging said brake components to separate and permifting said brake components to be compressed by said resilient biasing means when said cam element is rotated to at least one of said selected pivot positions.

5,910,218

SYSTEMS FOR FORMING FILMS HAVING HIGH DIELECTRIC CONSTANTS

Young-wook Park, Kyungki-do; Moon-yong Lee, Seoul; Kyung-hun Kim, Seoul, and In-sung Park, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Sep. 12, 1996, Appl. No. 707,904

Claims priority, application Rep. of Korea, Nov. 28, 1995, 95-44270

Int. Cl.[6] C23C *16/00;* **H01L** *27/108*

U.S. Cl. 118—719 **25 Claims**

1. A system for forming a dielectric on a microelectronic substrate, said system comprising:

a process chamber which receives the substrate and isolates the substrate from an external atmosphere;

means for depositing the dielectric film on the substrate in said processing chamber wherein the dielectric film comprises a material chosen from the group consisting of Ta_2O_5, $BaSrTiO_3$ (BST) and $PbZrTiO_3$ (PZT); and

means for annealing the dielectric film in said process chamber so that exposure to air is reduced during and between said deposition and said annealing.

5,910,219

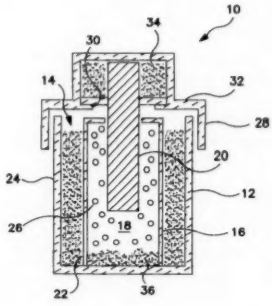
CAN COATING SYSTEM

Terry T. Perry, Buxton, Me.; Krishnangshu Bose, Manchester, Conn.; David W LaFlamme, Colchester, Conn., and Lester J Magyar, Wallingford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 6, 1997, Appl. No. 870,805

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—719 **8 Claims**



1. A coating apparatus comprising:

a can defining a chamber;

a hollow sleeve defining an internal space located within said chamber, said hollow sleeve defines with said can an annular space;

passage means located in said hollow sleeve for communicating said annular space with said internal space;

lid means for enclosing said can and said hollow sleeve for forming a closed compartment; and

support means for supporting a workpiece at least partially within said internal space wherein said activator is located within said internal space below said workpiece.

5,910,220

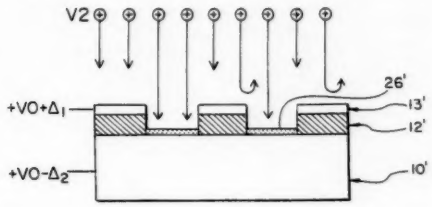
APPARATUS AND METHOD FOR SELECTIVE AREA DEPOSITION OF THIN FILMS ON ELECTRICALLY BIASED SUBSTRATES

Raymond A. Zuhr, Oak Ridge; Tony E. Haynes, Knoxville, both of Tenn., and Andrzej Golanski, Le Cheylas, France, assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Division of application No. 07/972,778, Nov. 9, 1992, Pat. No. 5,354,583. This application Aug. 5, 1994, Appl. No. 286,371.

Int. Cl.[6] C23C *16/04;14/04*

U.S. Cl. 118—723 FI **5 Claims**



1. An apparatus for selective area deposition of a film on an electrically biased substrate, the substrate having a patterned insulating layer formed thereon and a patterned conducting layer formed on the patterned insulating layer, the substrate being exposed between adjacent portions of the patterned insulating layer, the apparatus comprising:

ion source means for irradiating the exposed portions of the substrate with ionized particles having an electrical potential of energy level V;

means for applying an electric potential to the substrate, said electric potential being at an energy level sufficiently different from V so as to cause deposition of the ionized particles on the exposed portions of the substrate; and

means for applying an electrical potential to the patterned conducting layer at an energy level sufficient to avoid deposition. of the ionized particles thereon.

5,910,221

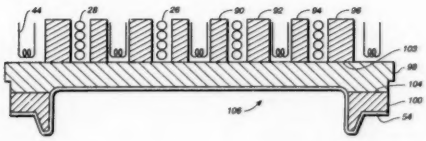
BONDED SILICON CARBIDE PARTS IN A PLASMA REACTOR

Robert W. Wu, Pleasanton, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 18, 1997, Appl. No. 878,223

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 R **20 Claims**



1. A plasma processing chamber, comprising:

a vacuum chamber;

a support for a workpiece to be processed within said vacuum chamber, said processing chamber being adapted to receive electrical energy to excite a processing gas within said vacuum chamber into a plasma; and

a larger part disposed at least partially within a portion of said vacuum chamber, therefore exposed to said plasma, and comprising a first sintered silicon carbide part bonded to a second sintered silicon carbide part, wherein said first and second parts are initially mechanically separate before being bonded together.

5,910,222

BISMUTH OXIDE SUPERCONDUCTOR AND METHOD OF PREPARING THE SAME

Kenichi Sato, and Takeshi Hikata, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd, Japan

Division of application No. 08/283,498, Aug. 1, 1994, Pat. No. 5,670,459, which is a continuation of application No. 07/670,124, Mar. 15, 1991, abandoned. This application May 19, 1997, Appl. No. 858,842.

Claims priority, application Japan, Mar. 16, 1990, 2-67934; Mar. 27, 1990, 2-80421

This patent is subject to a terminal disclaimer.

Int. Cl.[6] H01L *39/24*

U.S. Cl. 148—96 **4 Claims**

3. A method of preparing a bismuth oxide superconductor comprising the steps of:

preparing a raw material including components of Bi—Sr—Ca—Cu or (Bi,Pb)—Sr—Ca—Cu based on a 2223 composition of Bi—Sr—Ca—Cu or (Bi,Pb)—Sr—Ca—Cu, said preparing step further comprising the steps of:

(a) performing at least one first heat treatment to said raw material;

(b) pulverizing said raw material after each heat treatment, and

(c) conducting a degassing process to said raw material in a decompressed atmosphere, whereby said raw material prepared consists mainly of a 2212 superconducting phase and at least one non-superconducting phase;

covering said raw material with a metal sheath; and

performing deformation processing and a second heat treatment on said metal sheath,

wherein said second heat treatment is performed at an end temperature of a partial fusion reaction of said raw material.

5,910,223

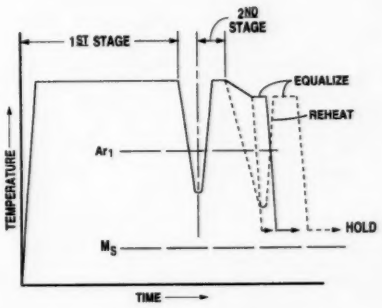
STEEL ARTICLE HAVING HIGH HARDNESS AND IMPROVED TOUGHNESS AND PROCESS FOR FORMING THE ARTICLE

Sheryl A. Tipton, East Peoria, and Gary D. Keil, Elmwood, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 25, 1997, Appl. No. 978,326

Int. Cl.[6] C22C *38/02;* **C23C** *8/22*

U.S. Cl. 148—210 **7 Claims**



1. An article formed of a steel material containing from about 0.08 percent to about 0.35 percent carbon and no more than 0.10 percent silicon and having a microstructure characterized by the presence of a plurality of surface carbides on at least one preselected surface of said article, said surface carbides being dispersed in a predominately lower bainitic matrix.

5,910,224

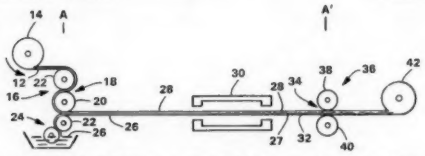
METHOD FOR FORMING AN ELASTIC NECKED-BONDED MATERIAL

Michael Tod Morman, Alpharetta, Ga., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Provisional application No. 60/028,353, Oct. 11, 1996. This application Sep. 11, 1997, Appl. No. 927,288.

Int. Cl.[6] B32B *5/00*

U.S. Cl. 156—178 **20 Claims**



1. A method of forming a stretchable composite comprising:

applying an elastomeric precursor to a first neckable material; then

neck-stretching said neckable material; and

treating said elastomeric precursor to form an elastomeric layer wherein said elastomeric layer bonds to said necked material and wherein said neckable material recovers after being stretched in the necked direction.

5,910,225

FILM AND NONWOVEN LAMINATE AND METHOD

Larry H. McAmish, Cornelius, N.C.; Richard L. Ferencz, Isle of Palms, S.C., and Gregg T. Wilkinson, Nashville, Tenn., assignors to Chicopee, Inc.

Filed Oct. 16, 1997, Appl. No. 951,687

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—229 **8 Claims**

1. Method for making a breathable fabric and film laminate, said method comprising the steps of providing a web of a fabric, laminating a thermoplastic film onto said web of fabric to form a film and fabric laminate, said film being rendered microporous upon heating and permanent elongation, and then heating and permanently elongating said film and fabric laminate to permanently increase the size of said laminate and to render said film microporous.

5,910,226

METHOD OF LAMINATING A PLASTIC FILM HAVING TRANSVERSE CORRUGATIONS

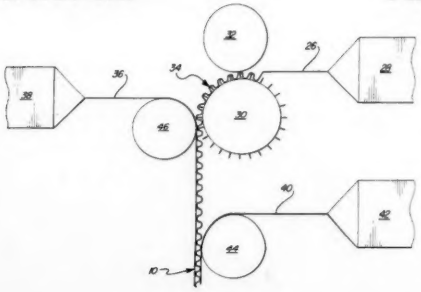
Claudio Moeder, Voghera, Italy, assignor to FRA. MO Snc di Franca Riva & C, Voghera, Italy

PCT No. PCT/GB95/01320, § 371 Date Apr. 8, 1997, § 102(e) Date Apr. 8, 1997, PCT Pub. No. WO96/01185, PCT Pub. Date Jan. 18, 1996

PCT Filed Jun. 7, 1995, Appl. No. 765,208

Int. Cl.[6] B29C *65/00*

U.S. Cl. 156—304.5 **5 Claims**



1. A method of producing corrugated sheet material comprising:

softening a film of thermoplastic material,

supplying the softened film to an embossing roller,

embossing a first set of parallel corrugations into the film,

embossing a second set of parallel corrugations into the film in transverse relationship to the first set of parallel corrugations, and

laminating the film to a first outer film of thermoplastic material by softening the first outer film and adhering the films together at the outer extremities of the corrugations.

5,910,227

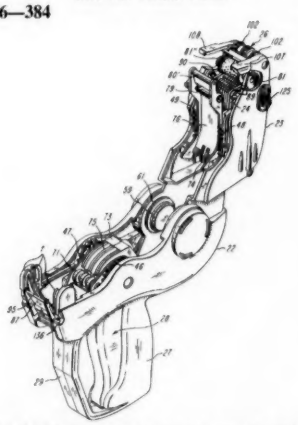
HAND-HELD LABELER

John D. Mistyurik, Troy; James A. Makley, Springboro, both of Ohio; Paul H. Hamisch, Jr., Las Vegas, Nev., and Ronald L. Fogle, Springboro, Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Aug. 22, 1996, Appl. No. 701,259

Int. Cl.[6] B65C *11/02*

U.S. Cl. 156—384 **16 Claims**



1. A hand-held labeler for printing and applying labels utilizing a supply roll including a composite web having pressure sensitive labels releasably secured to a carrier web, the labeler comprising: a housing having a lower housing section and an upper housing section, a platen, the lower housing section having a handle and mounting the platen, an actuator disposed at the handle, wherein a supply roll is rotatable about an axis, a print head and a cooperable platen, a toothed driver for advancing carrier web, the upper housing section mounting the print head for reciprocating straight line movement and being cooperable with the platen, a drive connection between the actuator and the print head and the toothed driver, and the upper housing section being mounted for pivotal movement about the axis.

5,910,228

APPARATUS FOR COVERING A TEXTILE DYE TUBE

Leon Eric Atkinson, Siler City; Joseph Stanley Taylor, Asheboro, and Paul Hier Miller, Greensboro, all of N.C., assignors to Technimark, Inc., Asheboro, N.C.

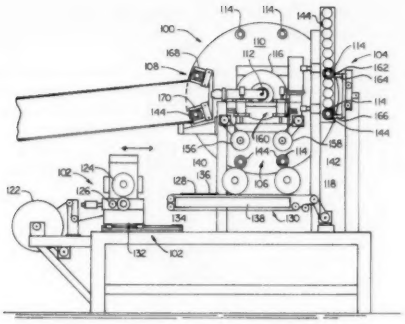
Continuation-in-part of application No. 08/646,614, May 8, 1996, Pat. No. 5,785,801. This application May 7, 1997, Appl. No. 852,750.

Int. Cl.[6] B32B *31/00;* **B65H** *81/00*

U.S. Cl. 156—450 **13 Claims**

1. An apparatus for covering a textile dye tube with a thermoplastic filter sheet, said apparatus comprising:

(a) a hollow mandrel for supporting said tube, at least a portion of the outer surface of said mandrel having a plurality of openings;



(b) a vacuum source connected to said mandrel for drawing said sheet against said mandrel, said vacuum source including a vacuum chamber extending from said sheet wrapping and sealing station, said vacuum chamber drawing a vacuum inside said mandrel at and between wrapping and sealing positions;

(c) sealing means for bonding the overlapping edges of said sheet to one another and to said tube, said sealing means including a heated roller movable between a retracted position and an extended position in contact with said sheet wrapped tube, said sealing means including a sealer at said sealing position for sealing said sheet around the circumference of said tube;

(d) means for wrapping said sheet around said tube in a direction opposite to the direction the yarn is wrapped, thereby significantly reducing snagging of the yarn on the overlapping edges of the sheet when the yarn is unwrapped;

(e) a mandrel support table having a tube loading station, a sheet wrapping and sealing station, and a discharge rotation;

(f) table drive means for indexing said mandrel sequentially to each of said stations;

(g) a tube feeder for feeding tubes to said tube loading station; and

(h) a sheet feeder for feeding sheets of filter material to said wrapping position.

5,910,229

APPARATUS AND METHOD FOR INTEGRALLY JOINING PREFORMED THERMOPLASTIC CORE ELEMENTS ESPECIALLY ADAPTED FOR THE CONTINUOUS MANUFACTURE OF MELT-BLOWN FILTER CARTRIDGES

Brian Mozelack, White Hall, Md.; Robert D. Connor, Spring Grove, and Robert J. Schmitt, Stewartstown, both of Pa., assignors to USF Filtration & Separation Group Inc., Timonium, Md.

Division of application No. 08/758,813, Dec. 4, 1996, Pat. No. 5,741,395, which is a division of application No. 08/686,012, Jul. 25, 1996, Pat. No. 5,653,833. This application Oct. 16, 1997, Appl. No. 951,416.

Int. Cl.[6] B23K *20/12;* **B29C** *65/06*

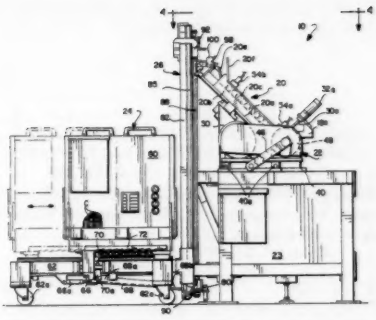
U.S. Cl. 156—458 **7 Claims**

1. An apparatus for integrally joining elongate preformed thermoplastic elements comprising:

a positioning assembly which coaxially abuts opposed ends of at least one pair of said thermoplastic elements, and

a friction-welding assembly which integrally joins said thermoplastic elements by friction-welding the abutted ends of said at least one pair of thermoplastic elements, wherein said positioning assembly includes,

(a) a cradle assembly for cradling an upstream one of said elements in coaxial relationship to a downstream one of said elements;



(b) a feed tray for holding an available stand-by supply of said elements, said feed tray being downwardly inclined to allow elements held thereby to roll by gravity into said cradle assembly;

(c) a magazine assembly for containing stacks of said elements; and

(d) a transfer assembly for sequentially transferring elements from said magazine to said feed tray.

5,910,230

STUCK SHEET MATERIAL MANUFACTURING SYSTEM EQUIPPED WITH PRESSURE DEVICE

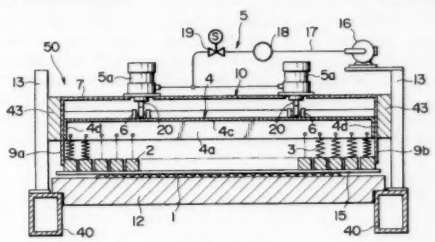
Yukuharu Seki, and Toshihide Kato, both of Hiroshima-ken, Japan, assignors to Mitsubishi Heavy Industries, LTD., Japan

Filed Jun. 6, 1997, Appl. No. 870,235

Claims priority, application Japan, Oct. 31, 1996, 8-290577

Int. Cl.[6] B30B *5/00*

U.S. Cl. 156—470 **10 Claims**



1. A stuck sheet material manufacturing system equipped with a pressure device for manufacturing a stuck sheet material comprising:

a sticking device for sticking together a front sheet member and a rear sheet member while moving said members through said system,

wherein said sticking device includes a heating member for heating a sheet member in contact with at least one of front and rear surfaces of said stuck sheet material and a pressure device provided opposite said heating member for pressing said stuck sheet material to said heating member, and

said pressure device includes a supporting member arranged so as to be extended in a horizontal direction perpendicular to a traveling direction, a plurality of weight blocks, each block suspended from said supporting member via an elastic member generating an elastic force, said blocks arranged side by side, each said elastomeric member having a first end connected to a respective wight block and an opposite end connected to said supporting member, and

vertical movement driving means for driving a vertical movement of said supporting member to determine a mounting height of said opposite ends of said elastic members, whereby the elastic force generated by said elastic members and

applied to respective blocks is set and pressing force applied to said stuck sheet material is selected.

5,910,231

ARAMID PAPERS OF IMPROVED SOLVENT RESISTANCE AND DIMENSIONALLY STABLE LAMINATES MADE THEREFROM

Birol Kirayoglu, Wilmington, Del., and David Jeffrey Powell, Freeport, Me., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 22, 1997, Appl. No. 898,728

Int. Cl.[6] **D21H** *13/26*

U.S. Cl. 162—145 **6 Claims**

1. A process for increasing the solvent resistance of aramid paper consisting essentially of from 45 to 97 weight % of poly(p-phenylene terephthalamide) short fibers, from 3 to 30 weight % of poly(m-phenylene isophthalamide) fibrids and from 0 to 35 weight % of quartz fiber and increasing the dimensional stability of laminates made from such paper, the process comprising heating the paper without the application of pressure at a temperature of from at least 280° C. (536° F.) for at least 20 seconds but not more than 20 seconds at 330° C. (626° F.).

5,910,232

METHOD FOR INHIBITING POLYMER FORMATION IN STYRENE PROCESSING

Zara Hyde, Old Bedhampton, United Kingdom, and Vincent E. Lewis, Missouri City, Tex., assignors to Nalco/Exxon Energy Chemicals, L.P., Sugar Land, Tex.

Filed Jun. 10, 1998, Appl. No. 95,426

Int. Cl.[6] **B01D** *3/34*; **C07C** *7/20*

U.S. Cl. 203—9 **10 Claims**

1. A method of inhibiting polymer formation in a styrene process, wherein the process has a styrene feed to a distillation section which includes at least one column and a reflux to said at least one column, comprising the step of adding an effective inhibiting amount of a stable nitroxide free radical compound to the styrene feed and to the reflux of said at least one column, wherein said at least one column is selected from the group consisting of an ethylbenzene/styrene monomer separation column, a benzene-toluene column and light ends and heavy ends purification columns.

5,910,233

METHOD OF AND DEVICE FOR PRODUCING MINERALIZED DRINKING WATER

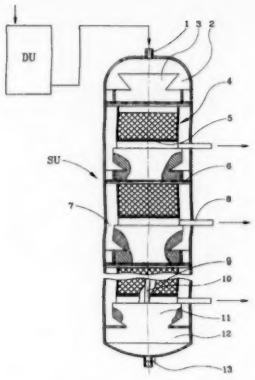
Gary Berg, 17 Heritage Blvd., Princeton, N.J. 08540; Dmitriy Taubman, 1208 Katchy Dr., Yadley, Pa. 19067, and Jakov Verchivker, 50 Pastera St. #8, Odessa 270100, Ukraine

Filed Aug. 8, 1997, Appl. No. 908,595

Int. Cl.[6] **B01D** *15/00;24/00;39/00;* **C02F** *1/04*

U.S. Cl. 203—10 **3 Claims**

1. A device for producing mineralized drinking water, comprising means for distilling a water; means for filtering the distilled water through at least one layer of soil which is taken from at least one area adjoining a source of natural mineral water so as to saturate the distilled water with ions of the natural mineral water to thereby produce the mineralized drinking water; said filtering means comprising cassettes accommodating the at least one layer of soil so that the distilled water passes through the cassettes and therefore through the at least one layer of soil accommodated in the cassettes so as to exit as the mineralized drinking water said cassettes, said cassettes being removably connectable with one another, a bactericidal element arranged so that the mineralized drinking water exiting the cassette; passes through said bactericidal element prior to use of the mineralized drinking water so as to provide a bactericide sterilization of the mineralized drinking



water; means for individually withdrawing the mineralized water from a respective one of said cassettes and including a plurality of outlet pipes extending from a respective one of said cassettes and each provided with an openable closure; and means for checking whether a corresponding one of the cassettes is still fit to use.

5,910,234

RECOVERY OF ALCOHOLS FROM PROCESS WASTEWATER FROM PRODUCTION OF SILICONE RESIN

Konrad Mautner, and Erwin Schuhbeck, both of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Germany

Filed Jul. 25, 1997, Appl. No. 900,955

Claims priority, application Germany, Sep. 18, 1996, 196 38 123

Int. Cl.[6] **C02F** *1/04*

U.S. Cl. 203—18 **11 Claims**

1. A process for recovering alcohol from the alcohol-containing wastewater containing resin droplets and/or gel which is obtained in the hydrolysis of silanes of the formula

$$R^1_aSiCl_b(OR^2)_{4-a-b} \quad (I)$$

where

R^1 is a hydrogen atom or identical or different monovalent, unsubstituted or halogen-substituted, SiC-bonded C_1–C_{18}-hydrocarbon radicals,

R^2 is an identical or different monovalent C_1–C_{10}-hydrocarbon radical,

a is 0, 1, 2 or 3, on average from 0.3 to 1.9, and

b is 0, 1, 2, 3 or 4, on average from 0.0 to 3.0,

with the proviso that the sum a+b is on average at most 3.5, for the preparation of silicone resins, wherein,

in the first step,

the wastewater is made alkaline by addition of alkali to condense said resin droplets and/or gel into insoluble organosilicic acid and,

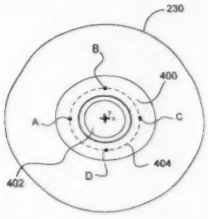
in the second step,

the alcohol is removed from the resulting alkaline wastewater by injection of steam.

5,910,235
ETCHING AND PIPELINED TEXTURING OF A SUBSTRATE IN A STATIONARY VACUUM DEPOSITION MACHINE

Stella Zofia Gornicki, Livermore, and Douglas J. Krajnovich, San Jose, both of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Sep. 12, 1997, Appl. No. 928,985
Int. Cl.[6] **C23C** *14/34;* **C23F** *4/02;* **B05D** *3/06*
U.S. Cl. 204—192.32 **9 Claims**



1. A method for using a stationary vacuum deposition machine to control the height of bumps formed in an annular region of a substrate in making a magnetic hard disk, the machine having controllable transport means and a series of stations including stations to which the controllable transport means sequentially moves the substrate and at each of which a film layer is deposited onto the substrate and including first and second stations, the method comprising the steps of:

transporting the substrate to the machine such that the substrate is in a first condition in which it is subject to chemicapillary and thermocapillary effects when subjected to localized thermal heating and melting;

loading the substrate into the machine;

controlling the transport means to cause the substrate to be moved into, and then be temporarily held stationary in, the *first station;*

etching a surface of the substrate while it is held stationary in the first station in an environment such that the first condition of the substrate is changed to a second condition that substantially reduces its susceptibility to the chemicapillary effect;

controlling the transport means to cause the substrate to be moved out of the first station and into, and then be temporarily held stationary in, the second station such that the substrate as it is moved from the first station to the second station, is maintained in an environment that reduces risk of reversion to the first condition; and

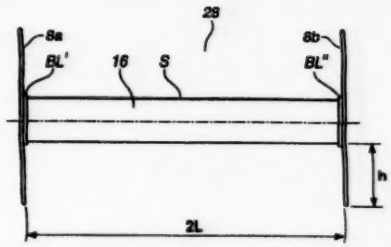
directing a scanning beam at the substrate while it is held stationary in the second station to form the bumps by the thermocapillary effect in the annular region of the substrate, wherein the height of bumps is controlled.

5,910,236
ELECTRODES FOR ELECTRO-CHEMICAL CORROSION PROTECTION SYSTEMS

Yuri Iossel, Rahakamarinkatu 2 B 17, FI-00241 Helsinki; Grigory Kazarov, Kartanonpolku 6 B 6, FI-02360 Espoo; Veijo Koski, Aamukuja 4 G, FI-02200 Espoo; Alexey Poliakov, Punavuorenkatu 23 F, FI-00150 Helsinki, all of Finland, *and Heiko Gebhardt, Residence 24, rue de Mersch, L-8293* Keispelt, Luxembourg

Filed Aug. 5, 1997, Appl. No. 906,075
Claims priority, application Russian Federation, Oct. 28, 1996, 96121149
Int. Cl.[6] **C23F** *13/00*
U.S. Cl. 204—280 **18 Claims**

1. Electrode for use in electrochemical corrosion protection systems, comprising at least two electrically non-conducting barriers, spaced apart along the electrode, and between which is formed an active part of the surface of the electrode, which active part is to be put in electric contact with an ionically conducting medium,

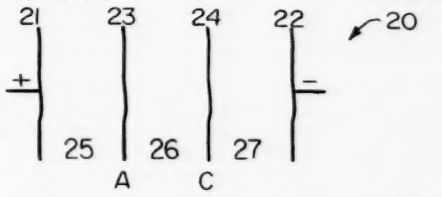


wherein at least one of said barriers has the shape of a plate *projecting from said active part, and said barriers have a substantial extension outwards from said active part of the surface of the electrode, so as to have a substantial extension into said conducting medium when said active part is put in electric contact with said conducting medium, thereby to homogenize the current distribution along said active part of the surface of the electrode.*

5,910,237
PROCESS FOR RECOVERING ORGANIC HYDROXIDES FROM WASTE SOLUTIONS

Roger D. Moulton, and Mark W. Hellums, both of Austin, Tex., assignors to Sachem, Inc., Austin, Tex.

Filed Mar. 11, 1997, Appl. No. 815,382
Int. Cl.[6] **B01D** *61/44;17/06*
U.S. Cl. 204—541 **22 Claims**



1. A process for recovering organic hydroxide from contaminated solutions containing the organic hydroxide and impurities including metal ion impurities comprising:

(A) charging the contaminated solution to a first electrochemical cell comprising at least two compartments, a cathode, an anode and a size selective divider and passing a current through the first electrochemical cell whereby metal ion impurities migrate through the size selective divider and organic hydroxide does not migrate through the size selective divider;

(B) recovering a second solution containing organic hydroxide from the first electrochemical cell and charging the second solution to a second electrochemical cell comprising at least *two compartments, a cathode, an anode and a divider and* passing a current through the second electrochemical cell whereby the organic hydroxide is purified; and

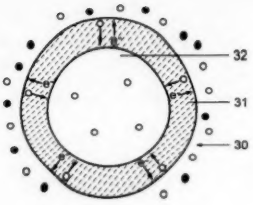
(C) recovering the organic hydroxide from the second electrochemical cell.

5,910,238
MICROSPHERES FOR COMBINED OXYGEN SEPARATION, STORAGE AND DELIVERY

Thomas L. Cable, Newbury; Michael A. Petrik, Highland Hts., and Benson P. Lee, Cleveland, all of Ohio, assignors to Technology Management, Inc., Cleveland, Ohio

Division of application No. 08/457,863, Jun. 1, 1995, Pat. No. 5,766,317. This application Dec. 22, 1997, Appl. No. 995,580.
Int. Cl.[6] **B01D** *53/00;53/32*
U.S. Cl. 205—634 **16 Claims**

1. A process for the separation, storage and delivery of substantially pure oxygen gas comprising:



filling an article with substantially pure oxygen gas, the article comprising a gas-tight, closed walled, hollow container wherein at least a portion of at least one wall of the article comprises a selective oxygen separation material which provides a sole means of transporting substantially all oxygen gas from a fluid into the article by electrochemical transport of dissociated oxygen ions and electrons, wherein said filling the article with substantially pure oxygen gas includes exposing the article to elevated temperature in a partial pressure of oxygen in excess of the oxygen partial pressure of the interior of the article; and,

storing the substantially pure oxygen gas within the article for a selected period of time.

5,910,239

POTENTIOMETRIC CO_2 SENSOR HAVING AN OPEN TITANATE- OR STANNATE-BASED REFERENCE ELECTRODE

Joachim Maier, Wiernsheim, Germany; Werner Sitte, Graz, and Michael Holzinger, St. Veit an der Glan, both of Austria, assignors to Max-Plank-Gesellschaft Zur, Munich, Germany

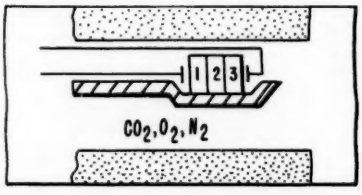
PCT No. PCT/EP95/02525, § 371 Date Dec. 23, 1996, § 102(e) Date Dec. 23, 1996, PCT Pub. No. WO96/00895, PCT Pub. Date Jan. 11, 1996

PCT Filed Jun. 29, 1995, Appl. No. 765,087

Claims priority, application Germany, Jun. 29, 1994, 44 22 800

Int. Cl.[6] G01N *27/407*

U.S. Cl. 205—781 **25 Claims**



1. A galvanic cell for measuring a gas comprising:

(a) a reference electrode comprising a combination of (i) titanium dioxide and an alkali-metal or alkaline-earth-metal titanate or (ii) tin dioxide and an alkali-metal or alkaline-earth-metal stannate in intimate mixture, said reference electrode not being isolated from a gas medium to be measured;

(b) a measuring electrode containing a compound which is in thermodynamic equilibrium with the gas to be measured; and

(c) an ion-conducting solid electrolyte contacting the reference electrode and with the measuring electrode.

5,910,240

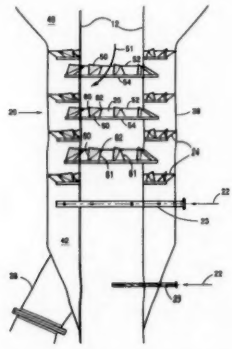
FCC UNIT CATALYST STRIPPER

Richard C. Senior, Cherry Hill; Christopher G. Smalley, Wrightstown, both of N.J., and Timothy P. Holtan, Joliet, Ill., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of application No. 08/771,869, Dec. 23, 1996. This application Sep. 1, 1998, Appl. No. 144,877.

Int. Cl.[6] C10G *35/00*

U.S. Cl. 208—113 **6 Claims**



1. In a fluid catalytic cracking process for converting a hydrocarbon feedstock that comprises (1) contacting the feedstock with cracking catalyst particles that are capable of promoting the conversion of the feedstock in a reactor section to produce at least one hydrocarbon product with a concomitant production of coke on the cracking catalyst, (2) separating at least a portion of the hydrocarbon product from the catalyst particles in a disengager section, (3) stripping the catalyst particles with steam in a stripper section, and (4) regenerating the catalyst particles in a regeneration section to oxidize at least a portion of the coke, wherein steps (1) through (4) are repeated continuously, the improvement comprising:

(a) passing the catalyst over a plurality of vertically spaced trays located within the stripper section comprising:

an upper portion for receiving the catalyst;

a downstream portion, located at a point vertically below the upper portion, said downstream portion terminating in a tray edge for discharging the catalyst to a vertically lower tray;

a slanted tray surface, encompassing both the upper and downstream tray portions, having a tray surface angle of from about 10–80° to impart radial movement to the catalyst as the catalyst flows downward over the tray surface in a vertical fashion; and

(b) passing the catalyst past a plurality of rotation vanes located within the stripper section to impart rotational movement to the catalyst, said rotation vanes having a front surface beginning at a rear edge and a front edge, wherein the front surface of said rotation vanes is angled such that the front edge is at a point angularly displaced in the rotational direction of the flow of the catalyst from the rear edge.

5,910,241

CATALYST AND HYDROTREATING PROCESS

David John McNamara, and Willem Hartman Jurriaan Stork, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of application No. 08/556,888, Nov. 2, 1995, Pat. No. 5,817,594. This application Dec. 9, 1997, Appl. No. 999,712.

Claims priority, application European Pat. Off., Nov. 3, 1994, 94203209

Int. Cl.[6] C10G *17/00;45/04*

U.S. Cl. 208—251 H **15 Claims**

1. A process for reducing the amount of solid and dissolved metallic contaminants, wherein a hydrocarbon oil containing such

contaminants is contacted with hydrogen under hydrotreating conditions in the presence of a catalyst comprising a porous inorganic refractory oxide, wherein the catalyst has:

(a) a total pore volume in the range of from about 0.2 to about 0.5 ml/g,

(b) a macroporosity of at least about 0.1 ml/g,

(c) a microporosity of at least about 0.5 ml/g, and

(d) a surface area of at least about 5 m^2/g.

5,910,242

PROCESS FOR REDUCTION OF TOTAL ACID NUMBER IN CRUDE OIL

Thomas R. Halbert; Kenneth L. Riley; Kenneth L. Trachte, all of Baton Rouge, La., and David L. Vannauker, Kingwood, Tex., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Aug. 29, 1997, Appl. No. 920,701

Int. Cl.[6] C10G *17/00*

U.S. Cl. 208—263 **9 Claims**

1. A process for reducing the total acid number of an acidic crude oil which comprises contacting the crude oil with a hydrotreating catalyst at a temperature of from about 200 to 370° C. in the presence of a hydrogen treat gas containing hydrogen sulfide at a total pressure of from about 239 to 13,900 kPa wherein the mol. % hydrogen sulfide in the treat gas is from 0.05 to 25.

5,910,243

DISPLACEMENT DEVICE

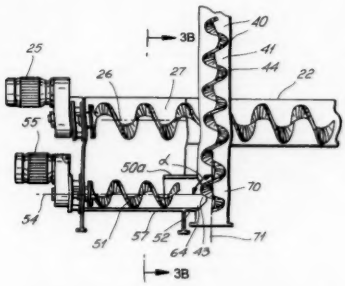
Richard L. Bruke, Bunkeflostrand, Sweden, assignor to Spirac Engineering AB, Malmo, Sweden

Continuation-in-part of application No. 08/545,852, filed as application No. PCT/SE94/00436, May 10, 1994, Pat. No. 5,676,827. This application Oct. 14, 1997, Appl. No. 950,387.

Claims priority, application Sweden, May 10, 1993, 9301637

Int. Cl.[6] B01D *21/24*

U.S. Cl. 210—104 **19 Claims**



1. Apparatus for displacement of sediment from the bottom of a container filled with liquid to a receptacle comprising:

a first conveyor disposed in a region near the bottom of said container, said first container including an upwardly open casing into which said sediment falls and a screw in said casing to transport said sediment therein to a discharge portion of the casing,

a second conveyor having an inlet portion for receiving sediment from said first conveyor and including a casing and a screw in said casing to transport the sediment from said inlet portion of the casing of the second conveyor to a discharge portion of the casing of the second conveyor located above a maximum filling level of the liquid in the container, and

transfer means disposed in said container for conveying the sediment from said discharge portion of the casing of the first conveyor to said inlet portion of the casing of the second conveyor,

said transfer means having a third conveyor including a screw and a short cylindrical tube attached to an infeed opening of the inlet portion of the second conveyor, and

said tube forming a "thread free" portion between the end of the thread of the screw of the second conveyor and the end of the thread of the screw or the transfer means providing means to form a plug of accumulated sediment fed by any of said screws.

5,910,244

ADAPTABLE CONTROL VALVE FOR FLUID TREATMENT SYSTEM

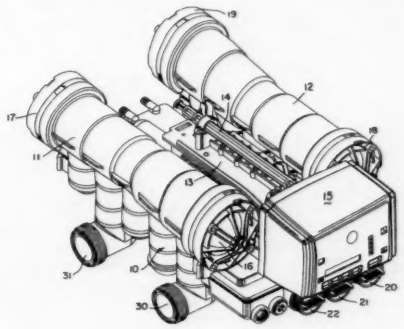
Theodore C. Stamos, Spring, Tex.; Stephen L. Galbraith, Mequon, and Thomas P. Honzelka, Grafton, both of Wis., assignors to Autotrol Corporation, Milwaukee, Wis.

Continuation of application No. PCT/US97/01133, Jan. 21, 1997, Provisional application No. 60/011,150, Jan. 26, 1996.

This application Aug. 5, 1997, Appl. No. 906,203.

Int. Cl.[6] B01D *24/46;* **F17D** *3/16*

U.S. Cl. 210—138 **28 Claims**



1. A control valve for a fluid treatment system that includes a treatment bed, comprising:

an array of pilot valves;

a timer mechanism for actuating the pilot valves in a controlled sequence;

a manifold connectable to the bed;

a pair of open-ended cylindrical valve bodies attached to the manifold and having ports in fluid communication with passages in the manifold; and

poppet valve assemblies received into certain of the open ends of the valve bodies and including valve actuators in fluid communication with respective ones of the pilot valves.

5,910,245

BIOREMEDIATION WELL AND METHOD FOR BIOREMEDIATION TREATMENT OF CONTAMINATED WATER

Bruno Bernhardt, Reutlingen, Germany; William G. Langley; Eric J. Klingel, both of Charlotte, N.C.; James G. Mueller, and Fayaz Lakhwala, both of Gulf Breeze, Fla., assignors to IEG Technologies Corp., Charlotte, N.C.

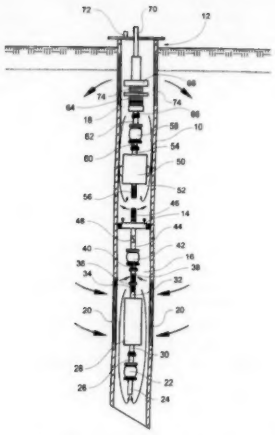
Filed Jan. 6, 1997, Appl. No. 779,135

***Int. Cl.[6] C02F** 3/30*

U.S. Cl. 210—170 **2 Claims**

1. An apparatus for the treatment of contaminated groundwater within an aquifer through an opening in a region of ground in the area of the aquifer, comprising:

a. a casing disposed within said opening, said casing having a first screened section, through which the water is drawn from the ground region, and a second screened section, through which the water is returned to the ground region;



b. means for separation disposed at a predetermined location within said casing between the first screened section and the second screened section, sealingly separating the opening into a first cell and a second cell;

c. a first pumping means, with an inlet and an outlet, disposed in the first cell, said inlet drawing water from the first cell;

d. an anaerobic bioreactor, having an inlet and an outlet, disposed in the first cell, for anaerobic biodegradation of groundwater contaminants, the anaerobic bioreactor inlet connected to the first pumping means outlet and the anaerobic bioreactor outlet opening into the first cell;

e. a second pumping means, with an inlet and an outlet, disposed such that the second pumping means inlet draws water from the first cell and the second pumping means outlet expels water to the second cell, causing groundwater to flow from the first cell to the second cell, the second pumping means being provided with a check valve to prevent backflow of water from the second cell to the first cell;

f. an aerobic bioreactor, having an inlet and an outlet, disposed in the second cell, for aerobic biodegradation of contaminants within the groundwater, said aerobic bioreactor inlet drawing water from the second cell;

g. a third pumping means, with an inlet and an outlet, disposed in the second cell, said third pumping means inlet being connected to the aerobic bioreactor outlet; and

h. a stripping reactor, disposed in the second cell, connected to the third pumping means outlet, the stripping reactor to strip volatile hydrocarbons and gaseous biodegradation byproducts from the anaerobically and aerobically treated contaminated groundwater, to aerate the groundwater, and to adiabatically cool the groundwater, the reactor having a liquid outlet to return the groundwater to the second cell and a vapor outlet extending outside the opening for aspiration of volatile hydrocarbons and other volatile contaminants and gaseous biodegradation byproducts.

5,910,246

DEVICE FOR ISOLATING NUCLEIC ACIDS

Thomas Walter, Bichl; Michael Fritz, Biblis; Herbert Harttig, Altrip; Hans Lange, Lampertheim, and Rolf Lerch, Ilvesheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

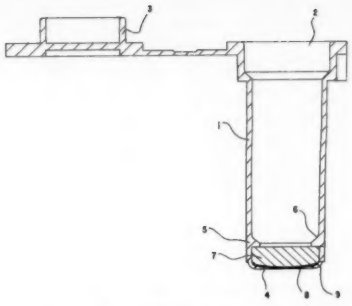
Filed Apr. 1, 1996, Appl. No. 617,696

Claims priority, application Germany, Apr. 1, 1995, 195 12 369

Int. Cl.[6] G01N *33/53*

U.S. Cl. 210—232 **21 Claims**

1. A process of assembling a device suitable for isolating a nucleic acid from a liquid sample, the device defining a hollow interior and having an inlet opening and an outlet opening, the process comprising:



(a) inserting a nucleic acid binding material into the hollow interior through the outlet opening; and

(b) thereafter narrowing the outlet opening to prevent the nucleic acid binding material from escaping from the outlet opening.

5,910,247

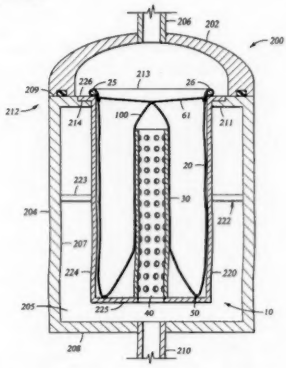
TWO ELEMENT FILTER BAG

W. Mark Outterside, 8581 Mosely, Houston, Tex. 77075

Filed Sep. 8, 1997, Appl. No. 926,524

Int. Cl.[6] B01D *39/00*

U.S. Cl. 210—487 **17 Claims**



1. A filter bag for filtering a process flow, comprising:

a hollow cylindrical outer element constructed of filter media including an open first end and an open second end;

said outer element including an outer element inside surface, said outer element inside surface having a length;

a hollow tubular inner element constructed of filter media including a closed first end and an open second end;

said inner element including an inner element outside surface, said inner element outside surface having a length;

said inner element positioned within said outer element so that said outer element first end is proximate said inner element first end, so that said outer element second end is proximate said inner element second end, and so that said inner element outside surface is proximate said outer element inside surface;

means for sealingly joining said outer element second end to said inner element second end;

said outer element first end and said inner element first end proximate the inlet of said process flow;

said outer element second end and said inner element second end proximate the outlet of said process flow;

said process flow entering said filter bag through said outer element open first end and filtering through said inner element outside surface and said outer element inside surface;

means for diverting said process flow within said filter bag;

said diverting means positioned within said outer element; and

said diverting means diverting said process flow so that said process flow is dispersed and is filtered along said lengths of said outer element inside surface and said inner element outside surface.

5,910,248
WATER FILTRATION

Bernd Tlok, Haulandsweg 104, 21220 Seevetal, Germany

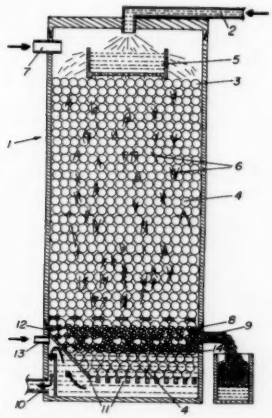
PCT No. PCT/EP95/03500, § 371 Date Mar. 7, 1997, § 102(e) Date Mar. 7, 1997, PCT Pub. No. WO96/07618, PCT Pub. Date Mar. 14, 1996

PCT Filed Sep. 6, 1995, Appl. No. 793,609

Claims priority, application Germany, Sep. 10, 1994, 44 33 388

Int. Cl.[6] C02F *3/04*

U.S. Cl. 210—608 **13 Claims**



1. A method for purifying water comprising at least one member selected from the group consisting of organic and inorganic particles, said method comprising supplying water to a collection surface forming above an outlet of a filtration apparatus comprising filler material, said water being supplied in an amount sufficient to cause the formation of bubbles in a trickle stream flowing through said filtration apparatus and forming foam on said collection surface by utilizing said bubbles, binding a major part of said at least one member selected from the group consisting of organic and inorganic particles in said foam, skimming said foam off said collection surface into a discharge area above said collection surface under pressure compensation, and discharging purified water through said outlet.

5,910,249
METHOD AND APPARATUS FOR RECOVERING WATER FROM A SEWER MAIN

Clinton Kopp, Castle Hill; Warren Johnson, Bligh Park; Anthony Day, North Rocks; Antony MacCormick, North Ryde; Tomasz Markiewicz, Baulkham Hills; Gary Stollery, Richmond; Mark Thompson, Randwick; Brett Alexander, Croydon Park, and Neil Wende, Menora, all of Australia, assignors to CRC for Waste Management and Pollution Control Limited, Kensington, Australia

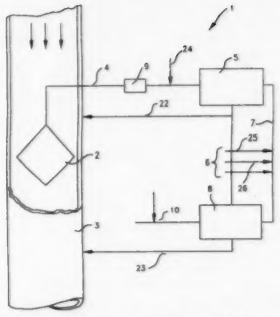
Filed Sep. 9, 1996, Appl. No. 635,919

Claims priority, application Australia, Oct. 27, 1993, PM 2060

Int. Cl.[6] C02F *9/00;1/44;* **B01D** *36/02;61/04*

U.S. Cl. 210—617 **31 Claims**

1. A process for recovering water from raw sewage extracted directly from a sewer, said process comprising the steps of:



directly screening the raw sewage to obtain screened effluent having a maximum particle size of between 50 and 900 microns; and

filtering some or all of the screened effluent through a microfiltration membrane separation stage for the removal of suspended solids without an intermediate long term biological treatment stage.

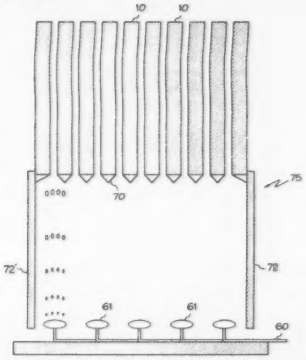
5,910,250
BAFFLE FOR CONVERSION OF FINE BUBBLES TO COARSE WHILE FILTERING WITH A VERTICAL SKEIN OF HOLLOW FIBERS

Mailvaganam Mahendran, Hamilton; Ake Adolf Deutschmann, Mississauga; Wayne Jerald Henshaw, Burlington, and Henry Behmann, Puslinch, all of Canada, assignors to Zenon Environmental Inc., Burlington, Canada

Continuation-in-part of application No. 08/514,119, Aug. 11, 1995, Pat. No. 5,639,373, and a continuation-in-part of application No. 08/690,045, Jul. 31, 1996, Pat. No. 5,783,083. This application Jun. 16, 1997, Appl. No. 896,517.

Int. Cl.[6] B01D *61/00;* **C02F** *1/44*

U.S. Cl. 210—636 **9 Claims**



9. In a process for maintaining the outer surfaces of hollow fiber membranes of a vertical skein having fibers of substantially the same length secured at opposed ends in first and second headers, essentially free from a build-up of deposits of particulate material while separating a permeate from a multi component liquid substrate having growing microorganisms therein requiring an environment of gas by submerging skein fibers in a reservoir of said substrate,

said process comprising,

flowing said gas through a gas-distribution means disposed beneath said skein,

collecting said permeate in said collection means; and, withdrawing said permeate,

the improvement comprising,

introducing said gas as fine bubbles, in a size range adapted to provide a desirable utilization rate by microorganism in said substrate, beneath a fine-bubble trapping zone bounded by a foraminous conversion baffle under said second header near the permeate discharging face thereof; and,

discharging said gas from said baffle adjacent a major portion of said second header's periphery, as coarse bubbles in a size range effective to scrub outer surfaces of said fibers.

5,910,251

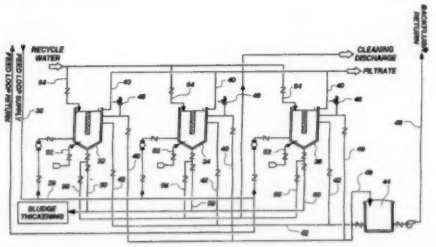
WASTEWATER TREATMENT PROCESS AND APPARATUS FOR HIGH FLOW FLUORIDE REMOVAL

Stephen D. Allen, Holladay, and Leonard Rees Lyman, South Jordan, both of Utah, assignors to Microbar Incorporated, Sunnyvale, Calif.

Division of application No. 08/756,681, Nov. 26, 1996. This application Oct. 24, 1997, Appl. No. 957,053.

Int. Cl.[6] C02F 1/44;1/56

U.S. Cl. 210—638 **19 Claims**



1. A process for removing fluoride from large volumes of wastewater comprising the steps of:

(a) treating a wastewater stream containing fluoride with a coagulant, wherein the coagulant reacts with the fluoride to form a particulate having a size greater than about 5μ;

(b) passing the treated wastewater through a microfiltration membrane having a pore size in the range from 0.5μ to 5μ, wherein the treated wastewater flow rate is in the range from 700 gallons per square foot of membrane per day ("GFD") to 1500 GFD, such that the fluoride is removed from water passing through the microfiltration membrane; and

(c) periodically backflushing the microfiltration membrane to remove solids from the membrane surface.

5,910,252

TECHNIQUE FOR EXTRACORPOREAL TREATMENT OF BLOOD

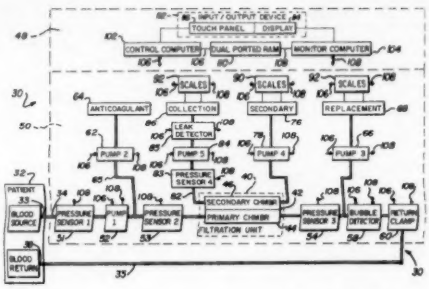
Lori A. Truitt, Golden; Frank Corbin, III, Littleton, both of Colo.; Donn D. Lobdell, Corona Del Mar, Calif.; Douglas P. Miller, Broomfield, Colo.; Keith Manica, Lakewood, Colo.; George J. Eilers, Evergreen, Colo.; Steven H. Johnson, Lakewood, Colo., and Lawrence L. Leppert, Littleton, Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Filed Feb. 12, 1993, Appl. No. 17,571

Int. Cl.[6] B01D *61/22;61/32;61/00;* **A61M** *1/34*

U.S. Cl. 210—645 **55 Claims**

23. A method for treating blood from a patient extracorporeally by a treatment which transfers matter to or from the blood through a semipermeable membrane, the semipermeable membrane being part of a filtration unit of an apparatus and dividing the filtration unit into a primary chamber and a secondary chamber, the primary chamber receiving the blood and the matter transferred across the semipermeable membrane into the blood, the secondary chamber receiving the matter to be transferred into the blood and the matter transferred across the semipermeable membrane from the blood, said method comprising the steps of:



establishing an extracorporeal blood flow primary circuit from the patient through the primary chamber and back to the patient;

controlling the flow of blood through the primary circuit;

selectively supplying a replacement fluid to the blood in the primary circuit prior to returning the blood to the patient;

controlling the amount of the replacement fluid supplied to the blood in the primary circuit;

establishing a secondary circuit for the flow of fluid through the secondary chamber;

selectively supplying a one of a secondary fluid containing matter which is to be transferred across the semipermeable membrane into the blood or a secondary fluid to remove matter from the secondary chamber which has been transferred across the semipermeable membrane from the blood to the secondary chamber;

controlling the amount of secondary fluid supplied to the secondary chamber;

collecting fluid exiting from the secondary chamber;

controlling the amount of fluid collected from the secondary chamber;

selecting one of a plurality of different extracorporeal blood treatments to be performed by the apparatus from the group consisting of UF, HD, HF, and HDF;

storing predefined information defining which of the ones of the replacement fluid and the secondary fluid are to be supplied and defining the flow rates in the primary and secondary circuits for each of the plurality of different extracorporeal blood treatments,

accumulating and storing flow rate information about an individual patient being treated with a selected treatment throughout the course of continuous and interrupted treatment; and

automatically adjusting and controlling the rate of flow of fluid through the primary circuit, the rate of flow of replacement fluid into the primary circuit, the rate of flow of secondary fluid into the secondary chamber and the rate of flow of fluid collected from the secondary chamber according to the extracorporeal blood treatment selected and the stored predefined information relating to the type of treatment selected.

5,910,253

REMOVAL OF METAL IONS FROM AQUEOUS SOLUTION

Maurice C. Fuerstenau, Reno, Nev., and Kangnian Zhong, Wuhan, China, assignors to The Board of Regents of the University and Community College System of Nevada, Reno, Nev.

Provisional application No. 60/031,053, Nov. 18, 1996. This application Nov. 17, 1997, Appl. No. 971,892.

Int. Cl.[6] B01D *15/00;* **C02F** *1/28*

U.S. Cl. 210—682 **20 Claims**

1. A method for removing a selected heavy metal ion from an aqueous solution, said method comprising:

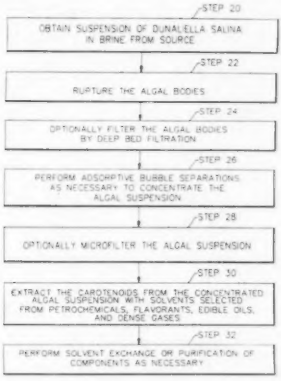
contacting said solution with collophane at a pH effective for capture of said selected heavy metal ion by said collophane.

5,910,254

METHOD FOR DEWATERING MICROALGAE WITH A BUBBLE COLUMN

Scott Arthur Guelcher, Weirton, W. Va., and Jeffrey Scott Kanel, Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 20, 1996, Appl. No. 770,284
This patent is subject to a terminal disclaimer.
Int. Cl.[6] B03D *1/02*
U.S. Cl. 210—703 34 Claims


STEP 20
OBTAIN SUSPENSION OF DUNALIELLA SALINA IN BRINE FROM SOURCE
STEP 22
RUPTURE THE ALGAL BODIES
STEP 24
OPTIONALLY FILTER THE ALGAL BODIES BY DEEP BED FILTRATION
STEP 26
PERFORM ADSORPTIVE BUBBLE SEPARATIONS AS NECESSARY TO CONCENTRATE THE ALGAL SUSPENSION
STEP 28
OPTIONALLY MICROFILTER THE ALGAL SUSPENSION
STEP 30
EXTRACT THE CAROTENOIDS FROM THE CONCENTRATED ALGAL SUSPENSION WITH SOLVENTS SELECTED FROM PETROCHEMICALS, FLAVORANTS, EDIBLE OILS, AND DENSE GASES
STEP 32
PERFORM SOLVENT EXCHANGE OR PURIFICATION OF COMPONENTS AS NECESSARY

34. A process for extracting mixed carotenoids from the alga *Dunaliella salina*, the process comprising the steps of:

a) obtaining a suspension of *D. salina* in brine from a source thereof;

b) rupturing the algal cells;

c) introducing a feed of the algal suspension into a multi-stage loop-flow flotation column for net downward gravity flow therein, the column including at least two loop-flow zones, each defining a radially inward region and a radially outward annular region;

d) sparging a gas in the absence of oxygen into the radially inward region of the lowermost loop-flow zone for net countercurrent flow through the algal suspension at a superficial gas velocity, J_g, of from about 0.1 to 1.0 cm/s and at a gas to feed ratio of from about 0.1 to 1.5;

e) promoting a higher gas holdup in the radially inward region than in the annular region, thereby circulating the algal suspension in a loop-flow upwardly through the radially inward region and downwardly through the annular region;

f) diverting gas flow from the radially inward region upwardly and radially inwardly, thereby minimizing gas bypass into the annular region;

g) diverting liquid flow downwardly and radially outwardly into the annular region, whereby backmixing is substantially eliminated, and the fine bubbles and algal suspension are intimately contacted to adsorb the algae onto the surfaces of the bubbles;

h) generating a froth enriched in algae, whereby the algae are separated from the brine;

i) collapsing the froth to obtain an algal concentrate; and

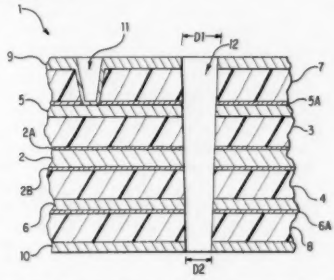
j) repeating steps c) through i) to provide a concentration of mixed carotenoids having a solids fraction in the froth on a gas-free basis of from about 1 to 17 percent by weight of the gas-free froth.

5,910,255

METHOD OF SEQUENTIAL LASER PROCESSING TO EFFICIENTLY MANUFACTURE MODULES REQUIRING LARGE VOLUMETRIC DENSITY MATERIAL REMOVAL FOR MICRO-VIA FORMATION

David B. Noddin, Eau Claire, Wis., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Nov. 8, 1996, Appl. No. 748,105
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—18 16 Claims



1. A method for forming a blind-via in a laminated substrate, comprising the steps of:

laser drilling a blind-via in a laminated substrate from a top surface of the substrate toward a bottom surface of the substrate using a first laser and a first trepanning motion of a laser focal spot of the first laser; and

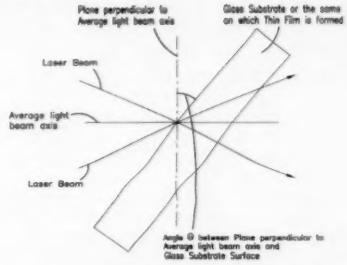
laser drilling the via in the substrate from the top surface toward the bottom surface using a second laser and a second trepanning motion of a laser focal spot of the second laser.

5,910,256

METHOD FOR MANUFACTURING A DIFFRACTION TYPE OPTICAL ELEMENT

Keiji Tsunetomo, and Tadashi Koyama, both of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Aug. 13, 1997, Appl. No. 910,365
Claims priority, application Japan, Aug. 27, 1996, 8-224936
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—24 6 Claims


Plane perpendicular to Average light beam axis
Glass Substrate or the same on which Thin Film is formed
Laser Beam
Average light beam axis
Laser Beam
Angle Θ between Plane perpendicular to Average light beam axis and Glass Substrate Surface

1. A method for manufacturing a diffraction type optical element having a plurality of convexities continuously formed on a surface thereof, said convexities having a shape from the group consisting of an asymmetric curved shape, an asymmetric trapezoid shape, a saw-toothed shape, and a blaze in cross-sectional configuration thereof, the method comprising:

forming an interference pattern by a plurality of laser beams;

inclining the surface of the substrate with respect to a plane perpendicular to an average light beam axis of the plurality of laser beams; and

forming the convexities by removing part of the surface by evaporating or ablating the substrate depending on intensities of the laser beams, using a distributed intensity of the interference pattern.

5,910,257
PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE USING PURIFIED PHOSPHORIC ACID

Hiroyuki Fukuda, Kawasaki; Takashi Nakanishi, Kanazawa, and Mitsuru Hirose, Takaoka, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

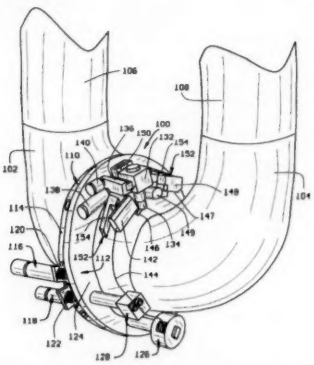
Filed Apr. 25, 1996, Appl. No. 637,432
Claims priority, application Japan, Apr. 27, 1995, 7-104291; Mar. 21, 1996, 8-064635
Int. Cl.[6] H01L *21/302;* **C01B** *25/234*
U.S. Cl. 216—93 **3 Claims**

1. In a process for producing a semiconductor device wherein a substrate is processed using a phosphoric acid processing solution, the improvement comprising using as said processing solution a purified phosphoric acid which is prepared by heating phosphoric acid, dipping a semiconductor base, which is different from the substrate, into said resultant heated phoshoric acid so as to deposit impurities therein on said semiconductor base, and then removing said semiconductor base therefrom, and has an impurity content at a level of not more than 10^{-3} Bq/mL, as defined by the concentration of a contained radioactive element selected from the group consisting of Pb, Bi and Po, and applying a protective film of Si_3N_4 or SiO_2 for preventing adsorption of the impurities to an unprocessed back surface area of said substrate, said purified phosphoric acid being used to process other areas of said substrate.

5,910,258
WELD HEAD ASSEMBLY

Benedict Kazirskis, Barto, Pa., and Lawrence M. Grycko, Lockport, Ill., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 25, 1996, Appl. No. 621,392
Int. Cl.[6] B23K *9/12*
U.S. Cl. 219—60 R **18 Claims**



1. A weld head assembly for forming a weld between two pipes in a nuclear reactor, the pipes having a substantially circular cross sectional shape, said weld head assembly comprising:

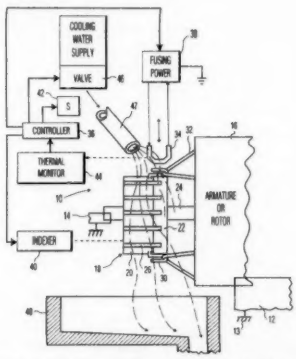
a mounting ring subassembly comprising a mounting ring configured to be mounted to one of the pipes, at least one motor mounted to said mounting ring, said motor comprising an output shaft having a rotatable spur gear mounted thereto, and a plurality of bevel rollers mounted at spaced locations to said mounting ring, said rollers mounted along a same radial path; and

a faceplate subassembly secured to said mounting ring subassembly, said faceplate subassembly comprising a faceplate ring, a bevel ring assembly engaged to said faceplate ring and located to rotatably interface with said bevel rollers of said mounting ring subassembly, and a spur gear assembly engaged to said faceplate ring and located to mesh with said rotatable spur gear of said mounting ring subassembly motor so that said faceplate subassembly rotates with said motor spur gear, said bevel ring assembly comprising upper and lower bevel rings and said spur gear assembly comprising upper and lower gear rings, said spur gear assembly further comprising an inner flange and said bevel ring assembly being seated on said inner flange, said bevel ring assembly and said spur gear assembly each having a generally circular shape, the diameter of said spur gear assembly being larger than the diameter of said bevel ring assembly.

5,910,259
SYSTEM FOR MAKING MOTORS WITH CARBON COMMUTATOR ASSEMBLIES

Allan S. Warner, Clark, N.J., assignor to Joyal Products, Inc., Linden, N.J.

Filed Jul. 2, 1997, Appl. No. 887,090
Int. Cl.[6] B23K *11/10*
U.S. Cl. 219—109 **11 Claims**



7. A method of making an electric machine having an armature assembly and a commutator subassembly that includes commutator segments, each commutator segment having a carbon based segment secured by solder material to a metal segment, each commutator segment being electrically separated from other commutator segments, each metal segment having a first portion for holding an armature wire portion in a fusing position, comprising:

moving a fusing electrode to compress together the first portion and the armature wire portion,

applying current through the electrode to raise the electrode temperature to heat the first portion and wire portion to form a fused joint between the first portion and the wire portion,

while applying electrode current, removing heat from the metal segment being fused to reduce the heat transfer from the first portion to the solder material of the commutator segment being fused,

applying cooling liquid to the commutator segment being fused and to the electrode for reducing the rate of electrode temperature rise while applying current, and

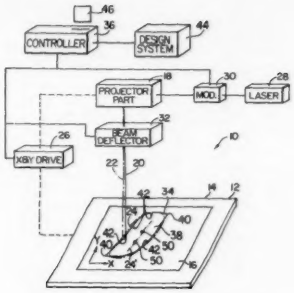
sensing the temperature of one of the first portion and the electrode, and initiating the application of cooling liquid in response to one of the first portion and electrode reaching a first predetermined temperature.

5,910,260
LASER CUTTER AND METHOD FOR CUTTING SHEET MATERIAL

Heinz Joseph Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., Tolland, Conn.

Continuation of application No. 08/424,809, Apr. 19, 1995, abandoned. This application Jun. 20, 1997, Appl. No. 880,136.
Int. Cl.[6] B23K *26/08*
U.S. Cl. 219—121.67 **23 Claims**

1. A line tracing energetic beam apparatus for processing work material along a desired two-dimensional processing line of pre-



given configuration to produce a processed line having said pregiven configuration, said apparatus comprising:

means providing data defining said processing line of pregiven configuration,

means providing a support surface for supporting work material having a top surface,

a beam projector part located above said support surface,

means associated with said projector part for projecting an energetic beam from said projector part toward said support surface generally parallel to a fundamental axis fixed relative to said projector part and generally perpendicular to said support surface,

drive means for moving work material supported on said support surface and said projector part relative to one another in two X and Y coordinate directions to move said fundamental axis along a two-dimensional axis trace line on the top surface of said work material,

a beam shifter for laterally shifting said beam in said two X and Y coordinate directions away from said fundamental axis, and

a controller for simultaneously controlling the operation of said drive means and of said beam shifter in response to said data so that while said fundamental axis moves along said axis trace line said energetic beam traces said desired two-dimensional processing line of pregiven configuration on said top surface of said work material to process said work material along said processing line and to thereby produce said processed line having said pregiven configuration.

5,910,261

LASER MACHINING DEVICE AND LASER MACHINING METHOD OF A ROUND HOLE

Atsushi Mori, and Yoshinori Nakata, both of Yamanishi, Japan, assignors to Fanuc, Ltd., Yamanishi, Japan

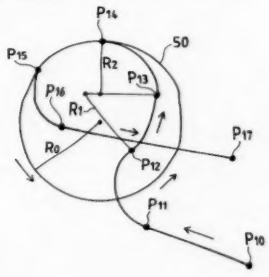
PCT No. PCT/JP96/02862, § 371 Date May 29, 1996, § 102(e) Date May 29, 1996, PCT Pub. No. WO97/12717, PCT Pub. Date Apr. 10, 1997

PCT Filed Oct. 2, 1996, Appl. No. 849,149

Claims priority, application Japan, Oct. 2, 1995, 7-254883

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.71 **6 Claims**



5. A laser machining method comprising the steps of:

moving a machining head along a movement path whose radius of circular arc or radius of a curvature continuously or step wise becomes approximate to the radius of a circular arc or the radius of a curvature of a machining path, without shifting the center of the circular arc or the center of the curvature of the path from one side of the path to the other side thereof, until reaching a first point situated on the machining path in correspondence with a desired machining shape to be cut by a laser machining device;

starting to output a laser beam at a start point of the path or at a midway point thereof while the machining head is moved along the path; and

stopping to output the laser beam at a second point on the machining path after finishing the movement of the machining head along the machining path in correspondence with the desired machining shape.

5,910,262

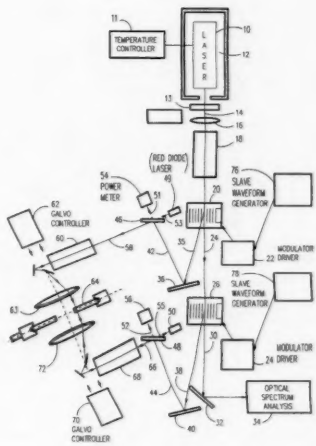
METHOD AND TOOL FOR LASER TEXTURING OF GLASS SUBSTRATES

Peter Baumgart; Chie Ching Poon, both of San Jose, and Andrew Ching Tam, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1997, Appl. No. 795,627

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.77 **18 Claims**



1. An apparatus for texturing a glass or glass-containing substrate comprising:

a laser source which generates a first beam;

a variable attenuator for adjusting the laser pulse energy;

two or more acousto-optic modulators arranged in series to obtain equal laser pulses from the first beam;

means for capturing a first order diffracted beam from each acousto-optic modulator;

means for monitoring the wavelength of the laser source;

means for providing a visible indicator or diagnostic beam for each first order diffracted beam;

means for combining each first order diffracted beam with its respective indicator beam to form a texturing beam for each combination;

means for conditioning each texturing beam to produce for each texturing beam an expanded and collimated beam;

means for reflecting and focusing each collimated beam onto any point in a plane normal to its direction of propagation to texture the substrate.

5,910,263

DEVICE FOR BINDING SHEETS BY HEATING

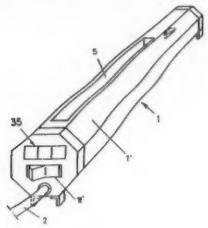
Wolfgang Weiffenbach, Bernau, and Kurt Leute, Blumberg, both of Germany, assignors to Ibico AG, Zurich, Switzerland

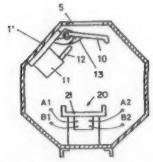
Filed Oct. 6, 1997, Appl. No. 944,285

Claims priority, application European Pat. Off., Oct. 7, 1996, 96810673

Int. Cl.[6] **H05B** *1/00;* **B42B** *5/00*

***U.S. Cl.* 219—221** **10 Claims**





1. A device for binding sheets by heating, in which at least one sheet has adhesive on the edge which is to be bound, comprising:

a housing having an elongated sheet receiving opening therein;

an elongated electrical heating unit within the housing, whose length matches the length of the elongated sheet receiving opening;

a switching system to activate an electrical circuit when the sheets to be bound are placed on the heating unit, the heating unit being wired in series with a switch in the switching system;

a heating current switch;

means provided so that when the switching system is switched on, the heating current switch is maintained in the on position;

a temperature sensor constructed to measure the temperature of the heating unit and a comparator whose input side is connected to the temperature sensor, the comparator constructed so that when a predetermined upper temperature threshold (T_{max}), which is a preselected temperature to obtain the desired heating of the adhesive to achieve proper binding, is measured, the comparator switches the heating current switch off;

whereby the heating unit will remain on long enough to properly soften the adhesive, but not longer than is desired.

5,910,264

ELECTRICAL COOKING APPARATUS FOR COOKING PRECOOKED, DEEP-FROZEN OR FRESH FOOD, OF THE FRYER TYPE, WITH NO OIL BATH

Michel Henri Dauliach, Résidence du Lac de Sault, 03410 Premilhat, France

PCT No. PCT/FR95/00855, § 371 Date May 20, 1997, § 102(e) Date May 20, 1997, PCT Pub. No. WO96/01259, PCT Pub. Date Jan. 18, 1996

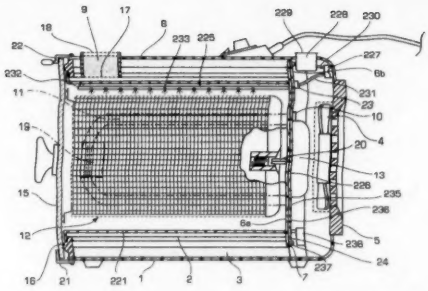
PCT Filed Jun. 27, 1995, Appl. No. 765,322

Claims priority, application France, Jun. 27, 1994, 94 07866

Int. Cl.[6] **A47J** *37/04;* **F27D** *3/12;1/18;* **F27B** *7/12*

U.S. Cl. 219—411 **15 Claims**

1. Domestic electrical cooking apparatus for cooking precooked, deep-frozen or fresh food, of the fryer type, with no oil bath and no preheating, having a body surrounding a metal chamber (**2**), a removable rotary basket (**12**) heated by infrared radiation mounted so as to rotate in the said chamber, an electric motor (**13**) for



driving the basket in rotation and a cover (**15**) for closing the chamber in a sealed manner, the base of the said rotary basket being provided with a spring system (**103***a*, **103***b*, **103***c*) for holding the rotary basket (**12**) in recumbent position, while the cover (**15**) is equipped with a system (**203**, **204**, **205**, **206**, **207**) for the rotary centering of the rotary basket (**12**), an open end of which interacts with the said rotary centering system on closing the cover (**15**), said apparatus further comprising, at an end of the chamber opposite the cover, a double row of perforations (**6***a*, **6***b*) forming part of a double path (**6***a*, **221**, **9**, **18**; **6***b*, **8**) for circulation of air, respectively inside the chamber of the apparatus and in the space between the body and the metal chamber (**2**), due to the effect of a fan (**4**).

5,910,265

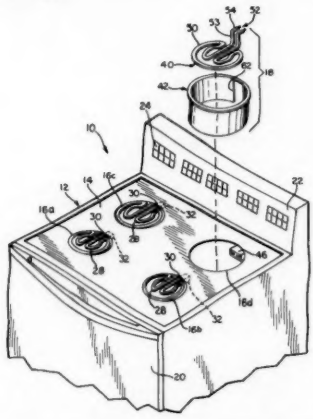
ELECTRIC RANGE AND A REVERSIBLE ELEMENT THEREFOR

Richard L. Baker, Lewisburg, Ohio, and Bernard J. Brotzki, Broken Arrow, Okla., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Provisional application No. 60/010,437, Jan. 23, 1996. This *application Jan. 21, 1997, Appl. No. 785,682.*

Int. Cl.[6] **H05B** *3/68;* **F27D** *11/00*

U.S. Cl. 219—454 **18 Claims**



15. A reversible electric coil for an electric range having a range top having a socket for receiving the reversible electric coil, the reversible electric coil being convertible to function as a slow cooker and comprising:

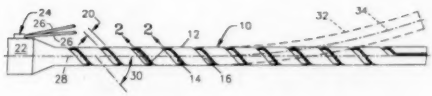
a planar portion defining a surface on which a pan is disposed; and

a generally L-shaped plug comprising an extension and a terminal,

the extension extends away from and is generally positioned beyond the periphery of the planar portion, wherein

the terminal is received within the socket at either a normal, non-reversed, position wherein the planar portion is disposed near the range top for normal cooking or the terminal is received within the socket in a reversed position wherein the planar portion is disposed below the cook top for slow cooking.

5,910,266
HELICAL ELECTRICAL HEATER
Darryl W. Jones, Akron, Ohio, assignor to The B.F. Goodrich Company, Richfield, Ohio
Filed May 28, 1997, Appl. No. 864,090
Int. Cl.[6] H05B *3/34;3/58;3/00;* **H01C** *3/16*
U.S. Cl. 219—528 **20 Claims**



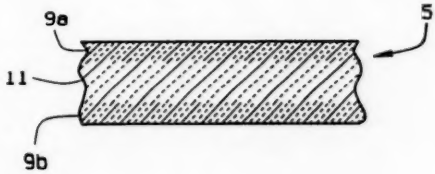
10. A heated assembly, comprising:

a flexible electrical insulation strip bounded by a first longitudinal edge and a second longitudinal edge, wherein said flexible electrical insulation strip is permanently set as a helix such that said first longitudinal edge is adjacent to said second longitudinal edge;

a flexible electrical heating element encapsulated within said electrical insulation strip; and,

a curved bendable conduit having an outer surface, said flexible electrical insulation strip being wrapped around said outer surface with said helix distributed along said outer surface.

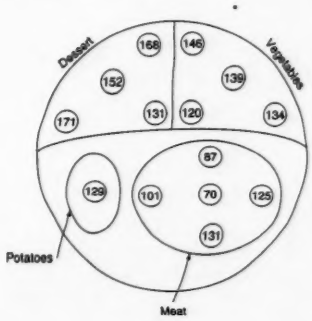
5,910,267
INFRARED HEATER
Jesse C. Stricker, 780 Vanderville Dr., Fenton, Mo. 63026
Filed Sep. 24, 1997, Appl. No. 936,499
Int. Cl.[6] H05B *3/10;3/34*
U.S. Cl. 219—548 **20 Claims**



1. An infrared heating element including a facing material having a first surface and a second surface, an insulating layer, and a heating element fixed between the facing material and the insulating layer; the first surface of the facing material defining a heating surface of the heating element when the heating element is assembled;

the insulating layer being made from a flexible insulating blanket; the insulating blanket having a first surface, a second surface, and a core between the first and second surfaces; the flexible blanket being rigidized by the application of a rigidizing solution to at least the first surface of the blanket; the rigidizing solution being absorbed only through a portion of the thickness of the blanket to leave the core of the blanket substantially free of rigidizing solution such that the insulating layer has a first density at the blanket's first surface and a second lesser density at the blanket's core.

5,910,268
MICROWAVE PACKAGING STRUCTURES
Richard M. Keefer, 221 Hayes Line R.R. #2, Omemee, Ontario, Canada, K0L 2W0
Division of application No. 08/529,074, Sep. 15, 1995, and a continuation-in-part of application No. 08/458,419, Jun. 2, *1995, abandoned. This application Apr. 22, 1998, Appl. No.* 64,141.
Int. Cl.[6] H05B *6/80*
U.S. Cl. 219—728 **11 Claims**



1. A control element capable of modifying the microwave heating of a microwave heatable load,

said control element having microwave reflective boundaries corresponding to a shape selected from closed loops and annular slots;

said boundaries providing guidance of microwaves leading to specific interference effects by interaction with the microwave heatable load, with dielectric materials when adjacent thereto, and with dielectric components of a microwave cavity or oven when the said control element is located beneath said load and when the load and element are supported thereby,

said microwave reflective boundaries being formed by variation of constitutive parameters across the boundaries of the control element to provide contiguous regions with differing constitutive parameters selected from differing dielectric constants, differing magnetic permeabilities, and differing conductivities between the regions,

and said interference effects being selected from constructive interference to provide resonant intensification of the microwave fields for intensification of microwave heating of the load, and from destructive interference to provide anti-resonant reduction of microwave field intensities for reduced microwave heating of the load,

the said control element being shaped in the form of a closed loop or annular slot whose mean circumference s is given by

$$s=n\lambda_o/2\sqrt{\epsilon_{eff}}$$

n is the mode order, and for resonance n is an even positive non-zero integer, and for anti-resonance n is an odd positive integer, and

ϵ_{eff} is the effective dielectric constant adjacent to the element, and

λ_o is the free space wavelength of the microwaves.

5,910,269

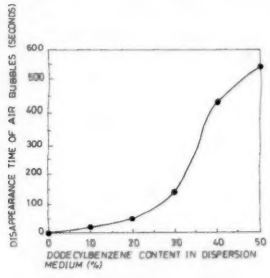
ELECTRORHEOLOGICAL FLUID COMPOSITION INCLUDING HYDROCARBON COMPOUND HAVING AT LEAST ONE UNSATURATED BOND

Satoru Ono, Tsuchiura; Ryuji Aizawa, Toride, and Yoshinobu Asako, Tsuchiura, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Continuation of application No. 08/326,494, Oct. 20, 1994, abandoned. This application May 19, 1997, Appl. No. 858,459.

Int. Cl.[6] C10M *169/04;171/00*

U.S. Cl. 252—73 18 Claims



1. An electrorheological fluid composition comprising:

a dispersed phase composed of dielectric solid particles; and

a dispersion medium composed of an electrically insulating solution,

wherein said solution is composed of 95–75% by weight of silicone oil and 5–25% by weight of a hydrocarbon compound having at least one unsaturated bond, said hydrocarbon compound consisting of hydrogen and carbon and being at least one member selected from the group consisting of a long-chain alkene, a long-chain alkyl aromatic hydrocarbon, a long-chain alkene aromatic hydrocarbon, polybutadiene, a copolymer of styrene and ethylene, and a copolymer of styrene and propylene, and

wherein the ratio of dielectric solid particles to the electrically insulating solution in the composition is 100 parts by weight to 50 to 500 parts by weight.

5,910,270

VISCOSITY REDUCTION OF ORGANOMAGNESIUM SOLUTIONS

Paul D. Jones, South Salem, N.Y.; Dennis B. Malpass, LaPorte, Tex., and Gregory M. Smith, Bethel, Conn., assignors to Akzo Nobel nv, Arnhem, Netherlands

Filed Aug. 19, 1997, Appl. No. 918,588

Int. Cl.[6] C09R *3/00*

U.S. Cl. 252—182.3 12 Claims

1. A hydrocarbon solution of a dialkylmagnesium compound having reduced viscosity, which solution comprises:

(a) a hydrocarbon solvent;

(b) a dialkylmagnesium compound normally soluble in hydrocarbon solvents; and

(c) an effective viscosity reducing amount of a compound selected from the group consisting of a compound having silicon-oxygen bonding, a compound having silicon-nitrogen bonding, and mixtures thereof.

5,910,271

ACTIVE MATRIX TYPE LIQUID CRYSTAL DISPLAY APPARATUS

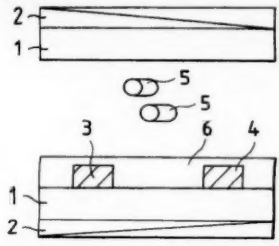
Masahito Ohe, Hitachi; Katsumi Kondo; Masuyuki Ota, both of Hitachinaka, and Shuichi Ohara, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 08/388,506, Feb. 14, 1995, abandoned. This application Aug. 16, 1996, Appl. No. 697,014.

Claims priority, application Japan, Jan. 14, 1994, 6-017098

Int. Cl.[6] C09K *19/52;* G02F *1/1337*

U.S. Cl. 252—299.01 15 Claims



11. A liquid crystal display apparatus, comprising

a pair of substrates, at least one of which is transparent;

a liquid crystal composite material layer disposed between said substrates;

an orientation control layer for controlling an orientation of a liquid crystal molecule;

electrodes on said substrates for applying an electric field substantially in parallel with said substrates;

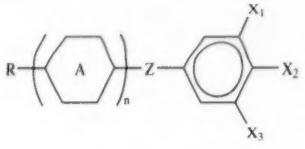
a polarization means; and

a drive means;

wherein a gap between said substrates is less than or equal to 6 μm, and a response time is less than or equal to 100 ms, and greater than or equal to 1 ms; and

wherein said liquid crystal composite material layer is made to include a liquid crystal chemical compound represented by the following general chemical formula (I), in which a fluoro group or cyano group, or both, coexist as an end group;

(I)



wherein, X_1, X_2 and X_3 are a fluoro group, cyano group or hydrogen atom; R is an alkyl group or alkoxyl group having a carbon number 1 to 10 which is replaceable; Ring A is a cyclohexane ring, benzene ring, dioxane ring, pyrimidine ring or (2,2,2)-bicyclooctane ring; Z is a single bonding, ester bonding, ether bonding, or methylene, or ethylene; and n is an integer of 1 or 2.

5,910,272

PROCESS FOR THE PREPARATION OF AN ELECTRICALLY CONDUCTIVE COATING MATERIAL

Nobuo Kushibiki, and Kikuko Takeuchi, both of Kanagawa, Japan, assignors to Dow Corning Asia, Ltd., Tokyo, Japan

Filed Mar. 18, 1998, Appl. No. 40,889

Claims priority, application Japan, Mar. 19, 1997, 9-066849

Int. Cl.[6] H01B *1/04*

U.S. Cl. 252—500 14 Claims

1. A process for preparing an electrically conductive coating comprising:

(i) forming a polysiloxane by hydrolytically condensing a silane of formula $R^2Si(OR^3)_3$ in a mixed solvent, wherein the mixed solvent comprises an alcohol and water, in the presence of finely divided silica; wherein R^2 is selected from the group consisting of epoxy-functional organic groups, saturated hydrocarbon groups of 1 to 18 carbon atoms, and aromatic hydrocarbon groups of 6 to 18 carbon atoms, with the proviso that at least some of the R^2 groups are epoxy-functional organic groups; and R^3 is a saturated hydrocarbon group of 1 to 8 carbon atoms; and

(ii) curing the polysiloxane to form a polysiloxane resin of formula $R^1SiO_{3/2}$; wherein R^1 is selected from the group consisting of epoxy-functional organic groups, saturated hydrocarbon groups of 1 to 18 carbon atoms, and aromatic hydrocarbon groups of 6 to 18 carbon atoms, with the proviso that at least some of the R^1 groups are epoxy-functional organic groups; and

wherein the electrically conductive coating has a volume resistivity of not less than 1×10^9 Ωcm and not more than 1×10^{14} Ωcm.

5,910,273

PROCESS FOR MANUFACTURING DENTAL PROSTHETICS BASED ON CERAMICS

Norbert Thiel, and Gabriele Datzmann, both of Bad Sackingen, Germany, assignors to Vita Zahnfabrik H. Rauter GmbH & Co. KG, Bad Sackingen, Germany

Continuation of application No. 08/157,541, Nov. 26, 1993, abandoned. This application Oct. 11, 1995, Appl. No. 540,751.

Claims priority, application Germany, Nov. 25, 1992, 42 39 549; Dec. 12, 1992, 42 42 007

Int. Cl.[6] A61C *13/00;13/08*

U.S. Cl. 264—16 **14 Claims**

1. A process for manufacturing a dental prosthetic comprising the steps of:

forming a molded-body precursor of the prosthetic by machine-processing a porosity-sintered molded blank by CAD/CAM methods to accurately fit prepared definition according to data on a patient's dental situation, said porosity-sintered molded blank consisting essentially of at least one oxide-ceramic material selected from the group consisting of aluminum oxide, magnesium oxide, zirconium oxide, and titanium oxide and, optionally, a siliceous additive;

compacting the molded-body precursor by glass infiltration to form the prosthetic.

5,910,274

METHOD OF PREPARING MEMBRANES FROM BLENDS OF POLYMERS

James Timothy Macheras, Quincy; Benjamin Bikson, Brookline, and Joyce Katz Nelson, Lexington, all of Mass., assignors to Praxair Technology, Inc., Danbury, Conn.

Continuation of application No. 08/320,725, Oct. 11, 1994, Pat. No. 5,733,657. This application Sep. 4, 1997, Appl. No. 923,821.

Int. Cl.[6] D01D *5/247*

U.S. Cl. 264—41 **8 Claims**

1. A process for making an anisotropic gas separation membrane, said process comprising:

(a) forming a blend of at least two polymers in at least one solvent, wherein at least one of said polymers being a low surface energy polymer having a measured surface energy that is at least 10% lower than the measured surface energy of the other polymers in the blend;

(b) extruding said blend, as a hollow fiber, through a gaseous atmosphere and into a liquid medium wherein said fiber solidifies as an anisotropic gas separation membrane; and

(c) recovering the solidified fiber anisotropic gas separation membrane, wherein said low surface energy polymer comprises less than 20% by weight of the overall membrane material and is concentrated in a surface discriminating layer.

5,910,275

PROCESS FOR PRODUCING A SPONGE CLOTH

Jörg Hausdorf, Fürth, and Eberhard Link, Dornhan, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Jun. 16, 1997, Appl. No. 876,573

Claims priority, application Germany, Jun. 14, 1996, 196 23 704

This patent is subject to a terminal disclaimer.

Int. Cl.[6] B29C *67/20*

U.S. Cl. 264—49 **13 Claims**

1. A process for producing a sponge cloth comprising the steps of:

swelling a starting pulp obtained from wood in a stirred vessel by pouring 15 to 35% lye over the pulp;

leaving the pulp to soak for about one hour;

forming a pressed cake by squeezing out the lye until the weight of the pressed cake is about three times the dry weight of the starting pulp;

grinding the pressed cake by milling to particle sizes smaller than 3 mm in diameter;

pouring a *liquid agent with an acetylating action on sodium* cellulose over the ground pressed cake in a stirred vessel to form a reaction mixture;

stirring the reaction mixture for about 60 minutes;

squeezing liquid out of the reaction mixture and leaving a solid cellulose derivative mass while removing the liquid by suction;

washing the resulting cellulose derivative mass with water;

drying the cellulose derivative mass at about 100° C. to yield a cellulose derivative powder;

forming a solution by dissolving the cellulose derivative powder at 20° C. to 50° C. in a solvent system based on dimethyl sulfoxide or dimethylacetamide to a concentration of 4 to 12 wt %;

forming a mixture by adding to the solution, which is defined as 100 wt %

a) *100 to 500 wt % of a water-soluble salt that is anhydrous at* room temperature and is inert with respect to the cellulose derivative as a pore-forming agent;

b) 0.5 to 4 wt % fibers that are insoluble in the solvent and

c) up to 5 wt % coloring agents and foaming agents;

stirring or kneading the mixture at room temperature for 10 to 30 minutes until all components are distributed homogeneously;

pouring or spreading the mixture in a thickness equal to the thickness of the sponge cloth to be produced on a movable web and guiding the web with the mixture thereon through a bath with boiling water until a cohesive spongy sheet has been deposited;

separating the sheet from the web as the raw product;

washing the raw product with water resulting in a sponge cloth;

drying the resulting sponge cloth at about 100° C.

5,910,276
PREPARATION OF THERMOPLASTICS

Norbert Güntherberg, Speyer; Jürgen Hofmann, Ludwigshafen; Hilmar Ohlig, Kaiserslautern; Elmar Mailahn, Worms; Klaus Bus, Kaiserslautern; Bernhard Czauderna, HIrschberg, and Sven Grabowski, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

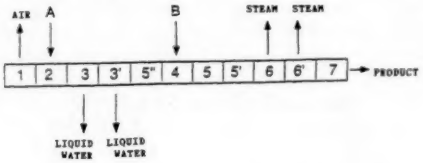
Filed Mar. 22, 1996, Appl. No. 620,310

Claims priority, application Germany, Mar. 27, 1995, 195 11 142

This patent is subject to a terminal disclaimer.

Int. Cl.[6] **B29C** *47/40;47/76*

U.S. Cl. 264—101 **12 Claims**



1. A process for the preparation of toughened thermoplastics by mechanically dewatering a solid; water-moist elastomer component A containing up to 60% by weight of residual water and mixing the resulting dewatered elastomer component A' with a thermoplastic polymer B in an extruder, wherein the solid, water-moist elastomer component A is obtained by producing a dispersion of elastomer particles in an aqueous solution and partially dewatering the dispersion of the elastomer particles by a suitable dewatering method until the solid, water-moist elastomer A results, and wherein the solid, water-moist elastomer component A is fed to a twin-screw extruder which has corotating, in each case double-flight, screws and essentially comprises, in the transport direction,

one unheated metering section in which elastomer component A is fed to the extruder by a metering means,

at least one unheated squeeze section which serves for dewatering and contains at least one retarding element and in each case at least one associated dewatering orifice, wherein no Seiher barrels are used as dewatering orifices,

at least one section provided with a conveying screw or at least one section provided with mixing, kneading or other plasticating elements or combinations of these elements, at least one section in which the thermoplastic polymer B is introduced as a melt into the extruder,

at least one section provided with mixing, kneading or other plasticating elements or combinations of these elements,

at least one devolatilization section which is provided with at least one devolatilization orifice and in which the residual water is removed as steam, and

a heated discharge zone, the water emerging from the dewatering orifices being present partially or completely in the liquid phases and the extruder being operated at a screw speed of from 50 to 600 min^{-1} and average shear rates of from 20 to 240 s^{-1}.

5,910,277
PROCESS OF MAKING A POROUS PTFE MEMBRANE

Toshiaki Ishino; Norikane Nabata, and Takuya Maeoka, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed May 16, 1997, Appl. No. 857,678

Claims priority, application Japan, May 17, 1996, 8-123755; Aug. 2, 1996, 8-205088

Int. Cl.[6] **B29C** *67/20*

U.S. Cl. 264—127 **7 Claims**

1. A process for producing a porous polytetrafluoroethylene membrane which comprises:

mixing a fine powder of polytetrafluoroethylene with a liquid lubricant;

molding the mixture into an unsintered sheet by at least one of an extrusion method and a rolling method;

stretching the sheet-form molding in the machine direction at a temperature lower than the melting point of sintered polytetrafluoroethylene to obtain a sheet-form polytetrafluoroethylene molding which, upon analysis with a differential scanning calorimeter, gives a crystal fusion curve having an endothermic peak in the temperature range of 345±5° C. and which has a degree of crystallization of from 0.1 to 0.85 and a specific gravity of 1.4 or lower; and

then stretching the sheet-form polytetrafluoroethylene molding in the transverse direction; wherein a porous polytetrafluoroethylene membrane is formed.

5,910,278
METHOD FOR MANUFACTURING A BELLOWS

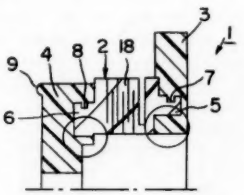
Jun Enomoto, Fukushima, Japan, assignor to Nok Corporation, Tokyo, Japan

Division of application No. 08/499,254, Jul. 7, 1995, Pat. No. 5,848,617. This application Jun. 26, 1997, Appl. No. 883,076.

Claims priority, application Japan, Jul. 8, 1994, 6-180961; Sep. 8, 1994, 6-240554

Int. Cl.[6] **B29C** *59/02*

U.S. Cl. 264—138 **4 Claims**



1. A method for manufacturing a bellows comprising;

forming a tubular hollow molded body having first and second ends with a first resin having a bending resistance;

inserting said hollow molded body into a mold;

injecting a second resin with less stress relaxation than said first resin into the mold on the first end of said hollow molded body through a connecting path, and on the second end of said molded body to mold a bellows intermediate including portions of said second resin molded on said ends of said hollow molded body connected by a portion of said second resin molded in said connecting path;

removing the portion of sail second resin molded in the connecting path from said bellows intermediate; and

cutting said hollow molded body to form a bellows portion of said bellows.

5,910,279
METHOD FOR FORMING DURABLE CREASES IN CELLULOSIC FIBER TEXTILE

Yuichi Yanai; Takayuki Hirai; Masayoshi Oba; Kiyoshi Ikeda; Yasushi Takagi; Takeo Ishikawa; Kazuhiko Harada; Hirotaka Iida; Kazuhiko Arakawa, all of Okazaki; Masazumi Ii, and Yuzo Nakamura, both of Hamamatsu, all of Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Filed Apr. 11, 1997, Appl. No. 840,130

Claims priority, application Japan, Apr. 12, 1996, 8-114399; Jul. 25, 1996, 8-214201; Dec. 3, 1996, 8-336269; Jan. 20, 1997, 9-021007; Mar. 7, 1997, 9-070638

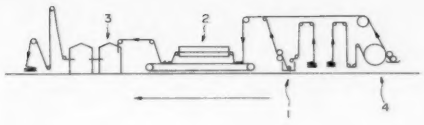
Int. Cl.[6] **B31F** *1/12*

U.S. Cl. 264—282 **7 Claims**

1. A method for forming durable creases in a cellulosic fiber textile, comprising the steps of:

treating the fiber textile with liquid ammonia,

creasing the fiber textile, and



subjecting the fiber textile to hot water or alkali treatment substantially simultaneous with or subsequent to the creasing step.

5,910,280

RELEASABLE PUSH-IN TUBE COUPLINGS

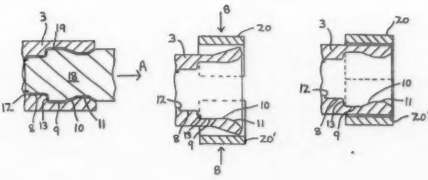
William S. Deason, Wheaton Aston, United Kingdom, assignor to IMI Norgren Limited, Staffordshire, United Kingdom

Filed Oct. 11, 1996, Appl. No. 729,411

Claims priority, application United Kingdom, Oct. 11, 1995, 9520748

Int. Cl.[6] B29C *33/44;43/42*

U.S. Cl. 264—296 **4 Claims**



1. A method of moulding, in one piece, a rigid thermoplastics body for a discrete, releasable push-in tube coupling device, said body having at least one terminal portion for receiving a tube to be coupled to the coupling device, said terminal portion comprising a wall having an externally cylindrical surface and defining an axial bore having an open end for receiving said tube, said bore having a cylindrical portion for seating an annular seal and, intermediate said cylindrical portion and said open end of said bore, a tapering portion that progressively reduces in internal diameter towards said open end of said bore, whereby said wall progressively increases in thickness from said cylindrical portion of said bore towards said open end thereof; said bore being adapted to receive a hollow tube-gripping collet that co-acts with said tapering portion of said bore thereby to retain said tube in the coupling device if said tube is accidentally pulled, the method comprising, in the following order, the steps of:

(a) injection moulding a thermoplastic material to form said body using tooling comprising separable tool portions for externally defining said body including said externally cylindrical surface of said wall, and a rigid core tool for defining said axial bore, said separable tool portions and said rigid core tool being configured relative to each other such that said wall formed therebetween progressively increases in thickness from said cylindrical portion of said bore towards said open end thereof,

(b) separating said separable tool portions whilst said body moulded in step (a) is still in a plastic state pursuant to step (a),

(c) withdrawing said rigid core tool in an axial direction through said open end whilst the said body moulded in step (a) is still in a plastic state pursuant to step (a), whereby the said wall, where said wall surrounds said tapering portion of said bore, radially expands to provide a radially expanded portion,

(d) subsequently radially thermoforming said radially expanded portion substantially back to said wall's externally cylindrical surface configuration as moulded in step (a); and

(e) causing or allowing said body to cool.

5,910,281

METHOD FOR RESTORING DRIED AQUEOUS ORGANIC GEL CAPSULES

Yasushi Kohno; Yoichi Ido, both of Shizuoka; Masayoshi Minami, and Riichi Minamiguchi, both of Osaka, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 12, 1996, Appl. No. 662,083

Int. Cl.[6] B29C *44/02;44/56*

U.S. Cl. 264—343 **4 Claims**

1. A method for restoring a dried aqueous organic gel capsule which comprises an aqueous organic gel capsule which has been hardened with a metal ion and which has been solidified by drying, and which aqueous organic gel capsule has an initial size, an initial weight, an initial breaking load and an initial surface smoothness, wherein the method comprises:

immersing the solidified capsule in an aqueous solution containing the metal ion which has participated in the hardening of the capsule, such that the organic gel capsule is restored as follows:

a) to within ±15% of said initial size;

b) such that the gel capsule suffers from no fall-off of said surface layer and retains said surface smoothness;

c) to within ±10% of said initial weight; and

d) to within ±10% of said initial breaking load.

5,910,282

METHOD FOR MAKING A MULTILEVEL POLYIMIDE STENCIL

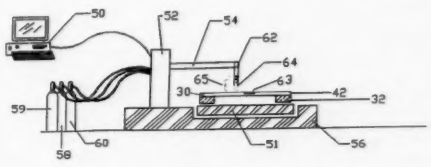
Dejan Grozdanovski, 177 Sheldon Avenue, Etobicoke, Ontario, Canada, M8W 5L5, and Keith C. Carroll, 6 Berney Drive, Caledon East, Ontario, Canada, L0N 1E0

Filed Dec. 23, 1996, Appl. No. 771,680

Claims priority, application Canada, Oct. 31, 1996, 2189291

Int. Cl.[6] B23K *26/14;26/16*

U.S. Cl. 264—400 **28 Claims**



1. A method of cutting an indentation of predetermined depth in a surface of a polyimide film using a laser comprising the steps of:

a) directing a laser beam from said laser against the surface of the polyimide film to cut into said polyimide film, said laser beam having a pulse duration and a power level;

b) directing a gas against the surface of said polymide film where the laser beam cuts into said polyimide film, said gas having a pressure; and,

c) determining the depth of the indentation cut into the surface of the polyimide material by selecting the pressure of the gas relative to selecting the pulse duration and the power level of the laser beam.

5,910,283

METHOD FOR IN MOLD TRIMMING

Gerald R. Hobson, 21721 Walnut St., Shell Rock, Iowa 50670

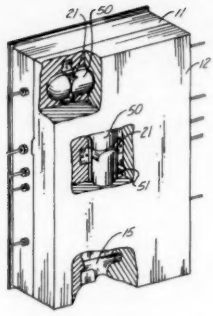
Division of application No. 08/607,180, Feb. 26, 1996, Pat. No. 5,698,236. This application Jul. 14, 1997, Appl. No. 893,591.

Int. Cl.[6] B29C *49/50*

U.S. Cl. 264—536 **3 Claims**

1. A method of trimming blow molded products while in the mold, said method comprising:

placing a parison between two mold halves of a mold;



moving the two mold halves together to form a cavity defined by the interior of the two mold halves and a cutting portion of a cutter, said cutting portion of said cutter substantially conforming to the shape of the portion of the interior of one of the two mold halves adjacent to said cutting portion and enclosing a portion of the parison within said cavity when the two mold halves move together;

blowing gas under pressure into the parison to expand the parison within said mold and thereby form a blow molded product;

trimming a portion of said product while it is in the mold by moving the cutter across and through the cavity and across the portion of the product to be cut;

separating the mold halves; and

removing the trimmed product from the mold.

5,910,284

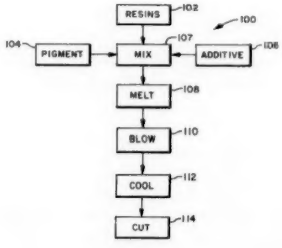
PROCESS OF MAKING POLYURETHANE FILM

Donald R. Dressler, Glastonbury, Conn., assignor to Stahls', Inc., St. Clair Shores, Mich.

Division of application No. 08/621,380, Mar. 21, 1996. This application Sep. 15, 1997, Appl. No. 929,830.

Int. Cl.[6] **B29C** *47/00;55/28*

U.S. Cl. 264—564 **4 Claims**



1. In a process for making polyurethane film including the steps of melting a mixture of at least a polyurethane resin, pigment, and lubricant and extruding the melted mixture, the improvement comprising mixing as said lubricant, no more than about 0.1 wt % of a non-blooming internal wax lubricant, prior to extrusion.

5,910,285

AUSTENITIC ACID CORROSION-RESISTANT STAINLESS STEEL OF AL-MN-SI-N SERIES

Xuesheng Zhao, No. 001, Entrance 5, Bldg. 1, Jingjidao Residential District, Xicheng District, Beijing 100032, China

PCT No. PCT/CN96/00064, § 371 Date Feb. 18, 1998, § 102(e) Date Feb. 18, 1998, PCT Pub. No. WO97/07253, PCT Pub. Date Feb. 27, 1997

PCT Filed Aug. 14, 1996, Appl. No. 29,049

Claims priority, application China, Aug. 18, 1995, 95116318

Int. Cl.[6] **C22C** *38/04;38/06*

U.S. Cl. 420—72 **12 Claims**

1. An Al—Mn—Si—N austenitic stainless steel having the following elements (wt. %): 0.06–0.12 C, 4–5 Al, 16–18 Mn, 1.2–1.5 Si, 0.15–0.30 N, 0.1–0.2 rare metal(s), the balance Fe and unavoidable impurities.

5,910,286

HIGHLY SELECTIVE CHEMICAL SENSOR

Jean-François Lipskier, Verrieres Le Buisson, France, assignor to Thomson-CSF, Paris, France

PCT No. PCT/FR96/00267, § 371 Date Oct. 17, 1996, § 102(e) Date Oct. 17, 1996, PCT Pub. No. WO96/26435, PCT Pub. Date Aug. 29, 1996

PCT Filed Feb. 20, 1996, Appl. No. 722,147

Claims priority, application France, Feb. 21, 1995, 95 01971

Int. Cl.[6] **G01N** *15/06;33/00;33/48*

U.S. Cl. 422—68.1 **18 Claims**

1. A chemical sensor which is selective for a species G comprising an acoustic wave transducer and a sensitive layer on a surface of an element of the transducer, wherein the sensitive layer comprises a macroporous, crosslinked molecular fingerprint material which has cavities whose steric and functional configuration is specifically suited to capturing species G in the cavities, said sensitive layer and the cavities therein having been prepared by in situ polymerization of polymerizable monomers and crosslinking agents as a uniform film upon said surface.

5,910,287

LOW BACKGROUND MULTI-WELL PLATES WITH GREATER THAN 864 WELLS FOR FLUORESCENCE MEASUREMENTS OF BIOLOGICAL AND BIOCHEMICAL SAMPLES

Peter J. Cassin, Encinitas; Alec Tate Harootunian; Andrew A. Pham, both of Del Mar, and Roger Y. Tsien, La Jolla, all of Calif., assignors to Aurora Biosciences Corporation, San Diego, Calif.

Filed Jun. 3, 1997, Appl. No. 868,049

Int. Cl.[6] **B01L** *3/00*

U.S. Cl. 422—102 **22 Claims**

1. A multi-well plate for fluorescence measurements of biological and biochemical samples, comprising:

more than 864 wells and each well comprising a wall and a bottom layer, said bottom layer with a low fluorescence and high transmittance portion comprising a cycloolefin copolymer, and

a frame, wherein said wells are disposed in said frame and said wells can hold ten microliters or less in volume,

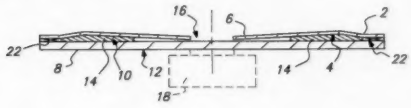
wherein said multi-well plate is for detecting a fluorescence signal from a biological and biochemical sample and said multi-well plate has a footprint of a standard 96-well microtiter plate, and further wherein said low fluorescence and high transmittance portion is substantially all of said bottom layer.

5,910,288

METHOD AND APPARATUS FOR MIXING A THIN FILM OF FLUID

Carol T. Schembri, San Mateo, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 10, 1997, Appl. No. 889,763
Int. Cl.[6] B01L *3/00;* G01N *1/10*
U.S. Cl. 422—102 32 Claims



1. Apparatus for mixing a film of fluid, comprising:

a first substantially planar surface having an inner face;

a second substantially planar surface having an inner face, wherein the second surface is substantially parallel to and proximate to the first surface such that the inner face of the first surface is in opposing relationship to the inner face of the second surface and the two inner faces define a fluid chamber between the two surfaces;

optionally an opening in one of the surfaces for introducing fluid into the fluid chamber; and

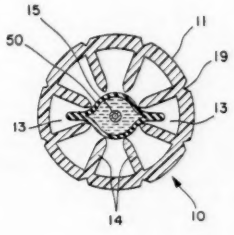
means for rotating the first and second surfaces about an axis generally normal to the planes thereof at variable angular velocities in a range including higher velocities great enough to cause a fluid within the fluid chamber to move centrifugally away from the rotational axis, such that mixing of fluid is induced within the fluid chamber.

5,910,289

DEVICE FOR COLLECTING A BLOOD SAMPLE FROM A PLASTIC SEGMENT TUBE

William E. Sagstetter, Denver, Colo., assignor to Medical Safety Products, Inc., Englewood, Colo.

Continuation-in-part of application No. 08/612,093, Mar. 7, 1996, Pat. No. 5,714,125. This application Oct. 15, 1997, Appl. No. 951,440.
This patent is subject to a terminal disclaimer.
Int. Cl.[6] G01N *1/10*
U.S. Cl. 422—102 22 Claims



1. A device for collecting a blood sample from a flexible segment tube having a tubular portion and sealed ends, said device comprising:

a housing;

a plurality of ribs defining a passageway within said housing for guiding and supporting the tubular portion of a segment tube;

puncturing means within said passageway for puncturing the segment tube and allowing blood released by the punctured segment tube to drain from said housing; and

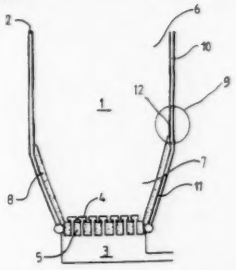
a plurality of slots separated by said ribs, said slots extending outward from said passageway for engaging and guiding the sealed end of the segment tube so that the segment tube is punctured by said puncturing means.

5,910,290

ARRANGEMENT IN A WALL AND A METHOD OF COATING A WALL

Timo Hyppänen, Karhula, Finland, assignor to Foster Wheeler Energia OY, Helsinki, Finland

PCT No. PCT/FI95/00533, § 371 Date Mar. 14, 1997, § 102(e) Date Mar. 14, 1997, PCT Pub. No. WO96/10657, PCT Pub. Date Apr. 11, 1996
PCT Filed Sep. 28, 1995, Appl. No. 793,796
Claims priority, application Finland, Oct. 3, 1994, 944587
Int. Cl.[6] F23M *5/08;* F23C *11/02;* F27B *15/04;* B04C *5/085*
U.S. Cl. 422—139 22 Claims



1. A fluidized bed reactor for combusting material at an elevated temperature and generating heat, said reactor comprising:

an upright reactor chamber delimited by at least one supporting wall having an internally refractory lined lower portion, said reactor chamber defining a space containing an abrading flow of fluidized bed material;

a refractory lining provided on the internal side of the lower portion of the supporting wall;

a recess provided on the internal side of the supporting wall above said refractory lining, said recess being defined by at least an upper endwall and a bottom; and

a coating provided on the internal side of the supporting wall above said refractory lining, said coating extending from the upper endwall of said recess to the refractory lining, for recessing at least an upper border region of said coating.

5,910,291

SURGERY PLUME FILTER DEVICE AND METHOD OF FILTERING

Randy Marc Skalla, Leesburg, Ga.; Carl Austin Ahrens, Cincinnati, Ohio; Robert Keith Garner, Jr., Miamisburg, Ohio, and Bradley Carl Wilkinson, Cincinnati, Ohio, assignors to EnviroSurgical, Inc., Springfield, Ohio

Continuation-in-part of application No. 08/198,480, Feb. 18, 1994, Pat. No. 5,522,808, which is a division of application No. 07/851,862, Mar. 16, 1992, Pat. No. 5,288,469. This application Jun. 3, 1996, Appl. No. 657,156.
Int. Cl.[6] B01D *50/00;53/00;* A61L *9/00*
U.S. Cl. 422—171 10 Claims

1. A filter device for treating an airstream containing gaseous and particulate materials from a surgery plume comprising:

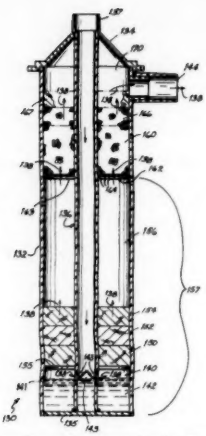
an elongated filter body having an inlet port and an outlet port and an airstream passage therebetween for accepting and exhausting the surgery plume airstream;

an internal solution reservoir formed inside the filter body and positioned in-line with the airstream passage to fill a portion of the passage for intercepting the airstream;

a charge of a reactive solution being contained within said reservoir;

a rupturable membrane positioned in the airstream passage for sealing said internal solution reservoir, said membrane being rupturable upon impingement by a flow of the airstream in said airstream passage;

the intercepted airstream and the reactive solution operably interactive for forming and breaking down a foam inside the filter body;



the filter body configured to contain the foam and expose the airstream to the foam for a time period sufficient to effect removal of gaseous and particulate materials from the surgery plume airstream;

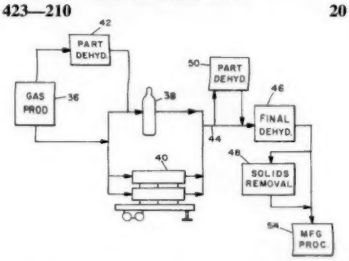
whereby the filter device exhausts the treated airstream into the atmosphere through the outlet port generally cleansed of certain agents in the surgery plume.

5,910,292

METHOD FOR WATER REMOVAL FROM CORROSIVE GAS STREAMS

Daniel Alvarez, Jr., San Diego, and Jeffrey J. Spiegelman, La Jolla, both of Calif., assignors to Aeronex, Inc., San Diego, Calif.

Filed Aug. 19, 1997, Appl. No. 914,524
Int. Cl.[6] B01D *53/28*
U.S. Cl. 423—210 **20 Claims**



1. A method of removing water from a stream of corrosive halogen gas which comprises contacting said gas stream with a quantity of high silica zeolite for a period of time sufficient to reduce the water content of said gas stream to not more than 100 ppb, said high silica zeolite comprising a zeolitic structure and a silica:alumina ratio of at least 20:1 and being substantially unaffected by said corrosive gas.

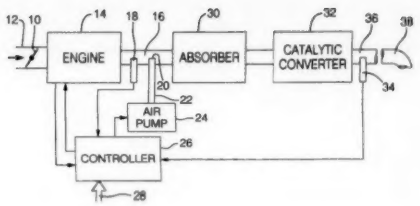
5,910,293

EXHAUST MANAGEMENT SYSTEM CONTROL

Mark David Hemingway, Columbiaville, and Nicholas Alexander Pamphilis, Clarkston, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 22, 1997, Appl. No. 898,419
Int. Cl.[6] F01N *3/10*
U.S. Cl. 423—213.7 **3 Claims**

1. An exhaust management control method comprising the steps of:



immediately following a cold start of an engine, adsorbing hydrocarbons from an engine exhaust gas into a hydrocarbon adsorber;

determining when a light-off of a catalytic converter in a flow path of the engine exhaust gas is obtained and thereafter purging the hydrocarbon adsorber by controlling a constituency of the engine exhaust gas to be fuel-lean, wherein the fuel-lean engine exhaust gas flows through the hydrocarbon adsorber and a first regeneration of the hydrocarbon adsorber is obtained;

detecting an engine off condition of the vehicle; and

injecting air through the hydrocarbon adsorber following the detected engine off condition while the vehicle remains in the engine off condition and while the hydrocarbon adsorber is hot enough that coke deposits thereon are oxidized and thereby removed from the hydrocarbon adsorber, wherein a second regeneration of the hydrocarbon adsorber is achieved.

5,910,294

ABATEMENT OF NF_3 WITH METAL OXALATES

John Giles Langan, Wescosville, and Howard Paul Withers, Jr., Breinigsville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 17, 1997, Appl. No. 971,545
Int. Cl.[6] C01B *21/00;9/08;* **C01J** *8/00*
U.S. Cl. 423—235 **10 Claims**

1. A process for abatement of NF_3 in gas streams containing NF_3 comprising contacting said gas stream containing NF_3 with a reagent selected from the group consisting of metal oxalates and mixtures thereof to abate said NF_3.

5,910,295

CLOSED LOOP PROCESS FOR PRODUCING *POLYCRYSTALLINE SILICON AND FUMED SILICA*

John P. DeLuca, Chesterfield, Mo., assignor to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed Nov. 10, 1997, Appl. No. 966,798
Int. Cl.[6] C01B *33/02*
U.S. Cl. 423—337 **5 Claims**

1. A closed loop process for producing electronic grade polycrystalline silicon from silane and fumed silica from silicon tetrachloride comprising the steps of:

a) subjecting impure silicon to hydrochlorination with hydrogen chloride to produce trichlorosilane and silicon tetrachloride together with minor amounts of dichlorosilane and monochlorosilane;

b) converting said trichlorosilane to silicon tetrachloride and silane;

c) converting said silane to polycrystalline silicon and hydrogen;

d) reacting the silicon tetrachloride from steps a) and b) with hydrogen and oxygen to produce fumed silica and hydrogen chloride; and

e) recycling the hydrogen chloride from step d) for use in step a).

5,910,296

METHOD OF PREPARING NI-M HYDROXYCARBONATE HAVING A HIGH DENSITY

Sang-won Lee, Seoul; Geun-bae Kim, Kyungki-do; Yong-chul Park, and Sung-soo Kim, both of Seoul, all of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 31, 1997, Appl. No. 962,484

Claims priority, application Rep. of Korea, Dec. 31, 1996, 96-79332

Int. Cl.[6] C01B *31/30*

U.S. Cl. 423—420.2 **19 Claims**

18. A powder nickel-metal hydroxycarbonate having a globular shape and a tapping density of 1.5.

5,910,297

ALKALINE EARTH FLUORIDE MANUFACTURING PROCESS

Walter Vladimir Cicha, Pittsburgh, Pa., and Donald Keith Swanson, Sommerville, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Provisional application No. 60/054,404, Jul. 31, 1997. This application Jul. 13, 1998, Appl. No. 114,454.

Int. Cl.[6] C01F *5/28;11/22*

U.S. Cl. 423—490 **4 Claims**

1. A process for producing an alkaline earth fluoride product, comprising:

(a) mixing (i) a first base component selected from the group consisting of compounds of the formula AO, compounds of the formula $A(OH)_2$, and mixtures thereof, where A is selected from the group consisting of Mg, Ca and Ba, (ii) a second base component selected from the group consisting of compounds of the formula MOH and mixtures thereof, where M is selected from the group consisting of Na, K and NH4, and (iii) water, to form an aqueous slurry having a temperature of at least 20° C. and an aqueous phase pH of at least 13;

(b) adding fluosilicic acid, optionally adding additional water and optionally adding additional second base component to the slurry of (a), said addition being at a rate which maintains an aqueous phase pH of 11 or above, and in an amount to provide a molar ratio of Si:A of at least 1:3.3, a molar ratio of M:Si of at least 2:1, and a molar ratio of water:Si of at least 20:1, and to obtain a precipitate comprising an alkaline earth compound of the formula AF2, and an aqueous solution of a soluble silicon anionic compound; and

(c) recovering the alkaline earth fluoride product.

5,910,298

METHOD OF AND APPARATUS FOR PERFORMING CONTINUOUS HYDROTHERMAL SYNTHESIS

Nakamichi Yamasaki, 107, Ko, Sakawa-cho, Kochi; Tsuneaki Mochida, Yokohama; Akihiro Maeda, Kawasaki; Takeshi Fukuda, and Tsuyoshi Morimura, both of Kurobe, all of Japan, assignors to Nakamichi Yamasaki, Kochi, and YKK *Corporation, Tokyo, both of Japan*

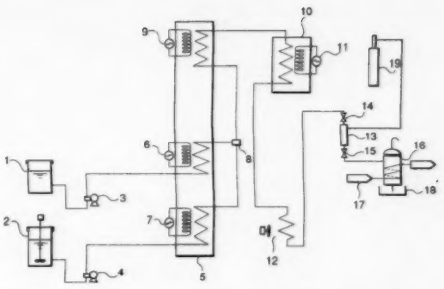
Filed Jan. 6, 1997, Appl. No. 779,351

Claims priority, application Japan, Jan. 10, 1996, 8-002560; Nov. 22, 1996, 8-312087

Int. Cl.[6] B29B *9/00*

U.S. Cl. 423—592 **18 Claims**

1. A process for making metal oxide powders by hydrothermal synthesis comprising separately preparing a material slurry and an aqueous liquid; pressurizing and heating the material slurry to a temperature lower than the saturated vapor temperature; pressurizing and heating the aqueous liquid in excess of the saturated vapor temperature; separately feeding the material slurry and the aqueous liquid through different pipes into an atomizing-mixing section; atomizing and mixing both the material slurry and the aqueous liquid thereby reducing the particle size of the material slurry and effecting hydrothermal synthesis in a reaction section in excess of the saturated vapor temperature.



5,910,299

ERS-10 ZEOLITE AND PROCESS FOR ITS PREPARATION

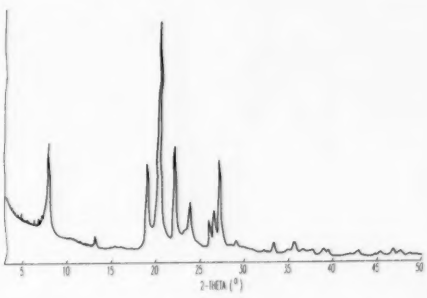
Luciano Carluccio, Milan; Roberto Millini, Cerro Al Lambro, and Giuseppe Bellussi, Piacenza, all of Italy, assignors to Eniricerche S.p.A., San Donato Milanese, Italy

Filed Mar. 5, 1997, Appl. No. 812,967

Claims priority, application Italy, Mar. 21, 1996, MI96A0556

Int. Cl.[6] C01B *39/04;39/48*

U.S. Cl. 423—706 **32 Claims**



1. A porous, crystalline material, designated ERS-10 zeolite, and having in its calcined and anhydrous form a molecular composition of oxides corresponding to the formula (I):

$$mM_{2/n}O.zX_2O_3.YO_2 \qquad (I)$$

wherein m is a number between 0.01 and 10; M is H^+ or a cation of an alkali or alkaline earth metal, where n is such as to define valence for M; z is a number between 0 and 0.02; X represents one or more elements selected from the group consisting of aluminum, iron, gallium, boron, vanadium, arsenic, antimony, chromium and manganese; and Y represents one or more elements selected from the group consisting of silicon, germanium, titanium, and zirconium, which porous crystalline material exhibits an X-ray diffraction spectrum in the powder form as shown in Table 1.

5,910,300

AMPHIPHILIC LINKERS FOR COUPLING ADMINISTRABLE DIAGNOSTICALLY OR PHYSIOLOGICALLY ACTIVE AGENTS AND BIOSELECTIVE TARGETING COMPOUNDS

Hervé Tournier, Valleiry, France; Sibylle Pochon, and Bernard Lamy, both of Geneva, Switzerland, assignors to Bracco Research S.A., Switzerland

Filed Oct. 31, 1996, Appl. No. 740,620

Claims priority, application European Pat. Off., Nov. 1, 1995, 95810689

Int. Cl.[6] A61K *49/00; G01N 31/00*

U.S. Cl. 424—9.34 **23 Claims**

1. Administrable molecular conjugate systems represented by the formula I⇆L-II wherein:

I is a magnetically responsive, MRI contrast ligand moiety carrying hydrophobic groups,

II is a targeting factor moiety having bioaffinity for specific sites, organs or tissues in the body, and

L is an amphiphilic bridging linker reactively functionalized and covalently linked to moiety II, said bridging linker L having hydrophobic and hydrophilic sequences in its molecule to non-covalently link to moiety I by affinity forces as represented by⇆ between the hydrophobic groups of I and the hydrophobic sequences of L.

5,910,301

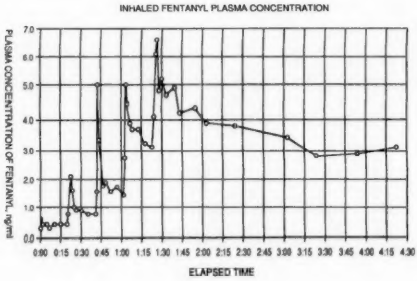
METHOD OF INTRAPULMONARY ADMINISTRATION OF A NARCOTIC DRUG

Stephan J. Farr; Antony M. Rowe, both of Cardiff, United Kingdom, and Reid Rubsamen, Hayward, Calif., assignors to Aradigm Corporation, Hayward, Calif.

Continuation of application No. 08/242,223, May 13, 1994, abandoned. This application Mar. 7, 1997, Appl. No. 813,094.

Int. Cl.[6] A61K *9/12*

U.S. Cl. 424—45 **5 Claims**



1. A method of intrapulmonary administration of a narcotic drug, comprising:

determining a patient's inspiratory flow rate and inspiratory volume;

calculating a point in the patient's inspiratory cycle for release of an aerosol of narcotic drug wherein the point in that most likely to result in reproducible delivery;

releasing, at the calculated point, a metered dose of aerosolized formulation from a pressurized canister wherein the formulation consists essentially of a free base form of a narcotic drug, a low boiling point propellant liquified under pressure and gaseous under atmospheric pressure, wherein the free base form of the drug is completely dissolved in the propellant; and

inhaling the metered dose of aerosolized formulation into the lungs of the patient thereby obtaining a blood plasma level of narcotic of above 1.5 ng/ml within 30 seconds or less from the inhaling.

5,910,302

HAIR CONDITIONING WITH BLENDED SILICONES

Daniel Joseph Halloran, Midland; Kenneth A. Kasprzak, Saginaw, both of Mich., and Patricia D. Herter, Foster City, Calif., assignors to Dow Corning Corporation, Midland, Mich.

Division of application No. 07/972,342, Nov. 6, 1992. This application Jun. 6, 1994, Appl. No. 254,852.

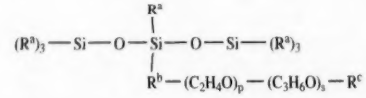
Int. Cl.[6] A61K *7/07;7/00*

U.S. Cl. 424—70.122 **5 Claims**

1. A composition comprising a mixture of an amine functional silicone and a trisiloxane polyether, the amine functional silicone having the formula:

$$R_{3-z}'QzSiO[R_2'SiO]x[R'QSiO]ySiQzR_{3-z}'$$

wherein R' denotes an alkyl group of 1 to 4 carbons or a phenyl group with the proviso that at least 50 percent of the total number of R' groups are methyl; Q denotes an amine functional substituent of the formula—R"Z in which R" is a divalent alkylene radical of 3 to 6 carbon atoms and Z is a monovalent radical selected from the group consisting of $—NR_2'''$, and —NR''' $(CH_2)nNR_2'''$; wherein R''' denotes hydrogen or an alkyl group of 1 to 4 carbons; and n is a positive integer having a value of from 2 to 6; z has a value of 0 or 1; x has an average value of 25 to 10,000; y has an average value of 0 to 100 when z is 1, y has an average value of 1 to 100 when z is 0; with the proviso that in all cases y has an average value that is not greater than one tenth the average value of x; the trisiloxane polyether having the formula:



wherein R^a is an alkyl group of one to six carbon atoms; R^b is a linking group and a radical selected from the group consisting of —O—, $—C_mH_{2m}—$, $—C_mH_{2m}O—$, $—C_mH_{2m-2}—$, $—C_mH_{2m-2}O—$ and $—C_mH_{2m}CO_2—$; R^c is a terminating radical selected from the group consisting of hydrogen, an aryl group, an acyl group, and an alkyl group of one to six carbon atoms; m is an integer having a value two to eight; p and s are each integers having values such that the oxyalkylene segment $—(C_2H_4O)_p—(C_3H_6O)_s—$ has a molecular weight in the range of 250 to 5,000; the oxyalkylene segment having fifty to one hundred mole percent of oxyethylene units $—(C_2H_4O)_p—$ and zero to fifty mole percent of oxypropylene units $—(C_3H_6O)_s—$.

5,910,303

AGENT FOR PROMOTING THE PLATELET AND THE LEUKOCYTE PRODUCTIONS

Kazue Takayama; Akira Harashima; Tsunetaka Ohta; Noboru Izumi; Hiroyoshi Tahata, and Masashi Kurimoto, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Dec. 12, 1995, Appl. No. 570,944

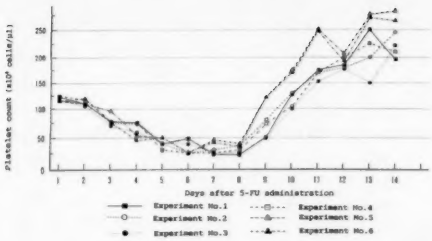
Claims priority, application Japan, Dec. 16, 1994, 6-333684; Dec. 16, 1994, 6-333686

Int. Cl.[6] A61K *38/19;38/20;38/21*

U.S. Cl. 424—85.1 **23 Claims**

1. A pharmaceutical composition for promoting platelet and/or leukocyte production in a mammal, comprising:

$0.1–10^9$ units of interferon-γ per gram of the pharmaceutical composition and $2×10^3–10^{10}$ units of a biologically active substance with either or both activities of promoting platelet and leukocyte production per gram of the pharmaceutical composition, consisting of a member selected from the group consisting of interleukin 3 (IL-3), interleukin 6 (IL-6), granulocyte colony-stimulating factor (G-CSF), macrophage colony-stimulating factor (M-CSF), granulocyte/macrophage colony-stimulating factor (GM-CSF), stem cell growth factor



(SCF), thrombopoietin (TPO), erythropoietin (EPO), and mixtures thereof, as effective ingredients, and wherein the content of said biologically active substance is less than a level which substantially promotes platelet and/or leukocyte production when used alone in said mammal to which the pharmaceutical composition is to be administered; and

a pharmaceutically acceptable carrier, excipient, stabilizer or auxiliary agent.

5,910,304

LOW-DOSE ORAL ADMINISTRATION OF INTERFERONS

Joseph M. Cummins, Amarillo, Tex., assignor to Texas A&M University System, College Station, Tex.

Continuation of application No. 07/044,317, Apr. 30, 1987, abandoned, which is a continuation of application No. *06/688,868, Jan. 4, 1985, Pat. No. 4,820,515, which is a* continuation-in-part of application No. 06/448,951, Dec. 13, 1982, Pat. No. 4,497,795. This application Apr. 28, 1992, Appl. No. 875,630.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] A61K *38/21*

U.S. Cl. 424—85.7 **8 Claims**

1. In a method for administering interferon orally to a warm-blooded vertebrate whereby ingested interferon is exposed to the digestive conditions of the vertebrate's digestive tract, the improvement which comprises administering interferon orally in solution at a unit dosage of about 0.1 to about 1.5 IU/lb of body weight of the vertebrate.

5,910,305

PROCESS FOR ENHANCING FETUS FIXATION OF A PREGNANT ANIMAL TO PREVENT ABORTION

Hisako Yasui; Jun Otsuka, and Junko Kiyoshima, all of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Jun. 30, 1995, Appl. No. 497,295

Claims priority, application Japan, Jul. 12, 1994, 6-181963

Int. Cl.[6] C12N *1/20*

U.S. Cl. 424—93.4 **13 Claims**

1. A process for enhancing fetus fixation of a pregnant animal for preventing abortion due to rotavirus infection comprising administering to a pregnant animal or an animal on a schedule to attempt to become pregnant, an effective amount of a bacterial strain of genus Bifidobacterium to augment IgA production, wherein the bacterial strain of genus Bifidobacterium having the effect of augmenting IgA production has an index value of 12 or more, said index value representing the IgA increment determined by the following formula:

$$\text{Increment} = \frac{\text{IgA in the culture supernatant of Peyer's patch cells with addition of the bacterial strain}}{\text{IgA in the culture supernatant of Peyer's patch cells with no addition of the bacterial strain.}}$$

5,910,306

TRANSDERMAL DELIVERY SYSTEM FOR ANTIGEN

Carl R. Alving, and Gregory M. Glenn, both of Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1996, Appl. No. 749,164

Int. Cl.[6] A61K *39/00;39/002;39/02;39/12*

U.S. Cl. 424—184.1 **29 Claims**

1. A method of inducing an immune response to an antigen comprising:

(a) applying a formulation to intact skin of an organism, wherein the formulation comprises liposomes and the antigen; and

(b) inducing the immune response in the organism without perforating the skin, wherein the immune response is specific for the antigen.

10. The method of claim **1**, wherein the antigen has a molecular weight greater than 800 daltons.

5,910,307

PROCESS OF EXTRACTING AND PURIFYING BIOLOGICALLY EFFECTIVE INGREDIENTS FROM COMBINED MEDICINAL PLANTS AND THEIR EXTRACT COMPOSITION

Wie-jong Kwak; Chang-kyun Han, both of Seoul; Hwan-su Kim, Kyungki-do; Jae-suk An, Kyungki-do, and Taek-soo Kim, Kyungki-do, all of Rep. of Korea, assignors to Sunkyong Industries, Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 19, 1996, Appl. No. 716,058

Int. Cl.[6] A01N *65/00;* **A61K** *35/78*

U.S. Cl. 424—195.1 **13 Claims**

1. A combined medicinal plant composition comprising the extract from a mixture of plants, wherein said mixture of plants comprises Clematis Radix, Trichosabthes root and Prunella Herba.

5,910,308

HERBAL EXTRACT COMPOSITION CONTAINING *GYNOSTEMMA PENTAPHYLLUM, CRATAEGUS PINNATIFIDA* AND *CAMELLIA SINENSIS*

Arthur H. K. D'Jang, Collins, N.Y., assignor to Sante International Inc., Jamestown, N.Y.

Provisional application No. 60/042,540, Mar. 19, 1997. This application Aug. 1, 1997, Appl. No. 905,128.

Int. Cl.[6] A61K *35/78;9/20;9/14;9/68*

U.S. Cl. 424—195.1 **20 Claims**

1. An herbal based composition comprising, as components, about 10 to 30 percent by weight of a mixture of an aqueous extract and an alcohol extract of *Gynostemma pentaphyllum*, about 40 to about 75 percent by weight of a mixture of an aqueous extract and an alcohol extract of *Crataegus pinnatifida* (hawthorn berries), and about 10 to about 30 percent by weight of a mixture of an aqueous extract and an alcohol extract of *Camellia sinensis* (green tea).

5,910,309

UV-INDUCED FACTOR FOR IMMUNOSUPPRESSION

Stephen E. Ullrich, Houston, Tex., assignor to Board Of Regents, The University Of Texas System, Austin, Tex.

Continuation of application No. 07/987,760, Dec. 8, 1992, abandoned, which is a continuation-in-part of application No. 07/768,232, Oct. 10, 1991, abandoned, which is a continuation of application No. PCT/US90/01402, Mar. 14, 1990, which is a *continuation-in-part of application No. 07/323,615, Mar. 14,* 1989, abandoned. This application May 1, 1995, Appl. No. 431,471.

Int. Cl.[6] A61K *41/00;38/19;* **C07K** *14/52*

U.S. Cl. 424—198.1 **6 Claims**

1. A method for inhibiting GVHD in a bone marrow recipient, comprising:

(a) administering to a prospective bone marrow cell donor an *amount of a isolated glycoprotein preparation effective to* inhibit GVHD having the following properties:

(i) binding affinity for concanavalin A-agarose;

(ii) a reduced binding affinity for concanavalin A-agarose in the presence of α-D-mannopyranoside;

(iii) a suppressive effect on delayed-type hypersensitivity without having an inhibitory effect on mammalian antibody production; and

(iv) isolatable from a culture of PAM 212 epidermal cells subjected to UVB-irradiation;

(b) sensitizing the prospective donor thereafter to alloantigens of a prospective bone marrow cell recipient; and

(c) transplanting bone marrow cells from the prospective donor to the prospective bone marrow cell recipient.

5,910,310

PORCINE PARAINFLUENZA VIRUS TYPE 2

Ernst Heinen, Echternacherbrück; Norbert Schmeer, Haan, and Werner Herbst, Biebertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP95/00642, § 371 Date Aug. 30, 1996, § 102(e) Date Aug. 30, 1996, PCT Pub. No. WO95/24214, PCT Pub. Date Sep. 14, 1995

PCT Filed Feb. 22, 1995, Appl. No. 700,548

Claims priority, application Germany, Mar. 7, 1994, 44 07 489

Int. Cl.[6] A61K *39/155;39/295;* **C12N** *7/00*

U.S. Cl. 424—211.1 **6 Claims**

1. Antigenic material comprising isolated whole particles or subunits of a porcine parainfluenza virus type 2.

5,910,311

COMPOSITION CONTAINING A NON-PHOTOCATALYTIC METAL OXIDE AND TOCOPHEROL, ITS USE IN THE COSMETICS AND/OR DERMATOLOGICAL FIELD AND PROCESSES EMPLOYING IT

Boudiaf Boussouira, Paris, and Quang Lan Nguyen, Antony, both of France, assignors to L'Oreal, Paris, France

Division of application No. 08/402,655, Mar. 13, 1995, Pat. No. 5,589,179. This application May 9, 1996, Appl. No. 647,001.

Claims priority, application France, Mar. 11, 1994, 94 02882

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **21 Claims**

1. A method of inhibiting the photoperoxidation of an unsaturated lipid, comprising contacting said unsaturated lipid with a composition comprising at least one non-photocatalytic metal oxide, at least one tocopherol and a metal-inactivating complexing agent, wherein

said at least one non-photocatalytic metal oxide is selected from the group consisting of zinc oxides, titanium oxides, selenium oxides, cerium oxides, magnesium oxides, zirconium oxides and a mixture thereof, present in an amount of from 0.1 to 5% by weight based on the total weight of said composition;

said at least one tocopherol is selected from the group consisting of α-tocopherol, β-tocopherol, γ-tocopherol, δ-tocopherol and a mixture thereof, present in an amount of from 0.02 to 6% by weight, based on the total weight of said composition; and

said metal inactivating complex is selected from the group consisting of ethylenediaminetetra(methylenephosphonic acid),

diethylenetriaminepenta(methylenephosphonic acid), and sodium salts thereof, present in an amount of 0.005 to 0.3% by weight, based on the total weight of said composition.

2. A method for combating skin irritation, inflammation, immunosuppression, acne and a mixture thereof which are induced by *light, comprising applying to skin a composition* which comprises at least one non-photocatalytic metal oxide, at least one tocopherol and a metal-inactivating complexing agent wherein

said at least one non-photocatalytic metal oxide is selected from the group consisting of zinc oxides, titanium oxides, selenium oxides, cerium oxides, magnesium oxides, zirconium oxides and a mixture thereof, present in an amount of from 0.1 to 5% by weight based on the total weight of said composition;

said at least one tocopherol is selected from the group consisting of α-tocopherol, β-tocopherol, γ-tocopherol, δ-tocopherol and a mixture thereof, present in an amount of from 0.02 to 6% by weight, based on the total weight of said composition; and

said metal inactivating complex is selected from the group consisting of ethylenediaminetetra(methylenephosphonic acid),

diethylenetriaminepenta(methylenephosphonic acid), and sodium salts thereof, present in an amount of 0.005 to 0.3% by weight, based on the total weight of said composition.

5,910,312

ACNE TREATMENT COMPOSITION WITH VASOCONSTRICTOR

Karen G. Fried, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.

Filed Oct. 9, 1996, Appl. No. 728,546

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **8 Claims**

1. An acne treatment composition having an amount of acne treatment medication to suitably treat acne, which comprises:

an effective amount of an acne treatment composition to treat acne, which composition includes:

(a) an acne treatment medication selected from the group consisting of benzoyl peroxide and salicylic acid;

(b) a vasoconstrictor selected from the group consisting of tetrahydrozoline hydrochloride and mixtures of tetrahydrozoline hydrochloride and zinc sulfate; and,

(c) an inert carrier;

wherein, when said benzoyl peroxide is the acne treatment medication, it is in an amount of about 0.1% to about 20% based on the total weight of the composition, and when said salicylic acid is the acne treatment medication, it is in an amount of 0.05% to 15.0% based on the total weight of the composition; and,

wherein said vasoconstrictor is in an amount of about 0.01% to about 20% by weight, based on the total weight of the composition.

5,910,313

USE OF COLLOIDAL SILICIC ACID IN A NAIL VARNISH COMPOSITION

Roland Ramin, Itteville, and Jean-Claude Garson, Suresnes, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 17, 1997, Appl. No. 895,860

Claims priority, application France, Jul. 18, 1996, 96 09010

Int. Cl.[6] A61K *6/00;7/00;7/04*

U.S. Cl. 424—401 **23 Claims**

1. A method comprising applying a varnish or nail care composition on a substrate, wherein said composition comprises:

at least one colloidal silicic acid present in an amount effective to provide surface hardness and resistance to penetration or deformation to a film formed from applying said composition on the substrate,

at least one film-forming material and

at least one solvent.

5,910,314

PROCESS FOR THE PREPARATION OF MICROCAPSULE COMPOSITIONS

Brian Eric Benoff, Hawthorne, N.J., and Robin William Dexter, Yardley, Pa., assignors to American Cyanamid Company, Madison, N.J.

Continuation of application No. 08/482,586, Jun. 7, 1995, Pat. No. 5,705,174. This application Oct. 7, 1997, Appl. No. 946,464.

Int. Cl.[6] A01N *25/28*

U.S. Cl. 424—408 **19 Claims**

1. A process for the preparation of a microcapsule composition which comprises:

(a) providing an aqueous solution containing (i) a salt or mixture of salts and (ii) an emulsifier or mixture of emulsifiers; and

(b) dispersing in the aqueous solution, a salt water-immiscible solution containing a polyisocyanate and a salt water-immiscible material to form a polyurea shell wall about the salt water-immiscible material;

wherein the salt is selected from the group consisting of lithium chloride, sodium chloride, potassium chloride, ammonium chloride, magnesium chloride, calcium chloride, lithium nitrate, sodium nitrate, potassium nitrate, magnesium nitrate, calcium nitrate, lithium sulfate, sodium sulfate, potassium sulfate, ammonium sulfate, magnesium sulfate, sodium monohydrogen phosphate, potassium monohydrogen phosphate, ammonium monohydrogen phosphate, sodium dihydrogen phosphate, potassium dihydrogen phosphate and ammonium dihydrogen phosphate.

5,910,315

ALLOGRAFT TISSUE MATERIAL FOR FILLING SPINAL FUSION CAGES OR RELATED SURGICAL SPACES

Sharon Stevenson, 2301 Roscomare Rd., #18, Los Angeles, Calif. 90077, and Arthur A. Gertzman, 45F Manchester La., West Milford, N.J. 07480

Filed Jul. 18, 1997, Appl. No. 943,549

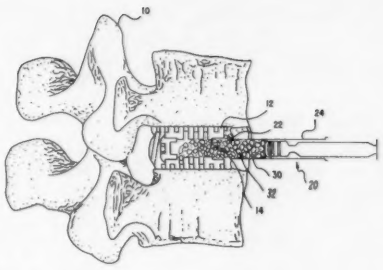
Int. Cl.[6] A61F *2/28*

U.S. Cl. 424—422 **18 Claims**

1. A method for filling a surgical site with bone material, comprising the steps of:

placing a mass of lyophilized bone chips of predetermined mixed size ranging from 100 microns to 2.0 mm, said mass of chips including a packing of the interstitial spaces between *the larger granular tissue particles of particulate cortical bone* powder ranging from about 100 to about 300 microns and larger sized granular tissue particles in a straight-walled barrel of a syringe having a circular opening at the distal end thereof, ranging from about 8 mm to about 15 mm in diameter;

tamping the mass of bone chips to fill air pockets in the syringe;



adding a volume of sterile fluid ranging from about 3 to about 6 times the bulk of the volume of the mass of bone chips to *provide adequate wetting;*

allowing the fluid to flow through said mass of bone chip to filly hydrate the bone chips for a period of time hydrating the bone chips until the mass is fully reconstituted from its initial lyophilized state and obtains chip self-adherence conforming to the shape of the lumen of the barrel of the syringe and retain such shape and geometric integrity;

draining sterile fluid from the syringe; and

depressing a plunger of the syringe and extruding the shaped bone material in a semi-solid mass which retains its shape and integrity in a surgical site.

5,910,316

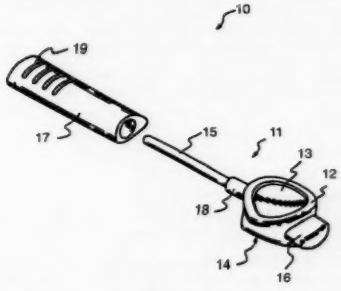
USE OF NITRIC OXIDE-RELEASING AGENTS TO TREAT IMPOTENCY

Larry K. Keefer, Bethesda; Joseph E. Saavedra, Thurmont, both of Md.; Paul C. Doherty, Cupertino; Mark S. Hanamoto, Belmont, both of Calif., and Virgil A. Place, Kawaihae, Hi., assignors to The United States of America, as represented by the Department of Health and Human Services, Washington, D.C., and Vivus, Inc., Menlo Park, Calif.

Continuation-in-part of application No. 08/121,169, Sep. 14, 1993, Pat. No. 5,525,357, which is a continuation-in-part of application No. 07/935,565, Aug. 24, 1992, Pat. No. 5,405,919. This application Apr. 10, 1995, Appl. No. 419,044.

Int. Cl.[6] A61K *47/32;47/42;* **A61L** *31/00;* **A61F** *13/00*

U.S. Cl. 424—433 **11 Claims**



1. A nitric oxide delivery means for the treatment of impotency in a male animal, said nitric oxide delivery means being selected from the group consisting of a transurethral applicator, a penile implant, a dermal patch and a condom, said nitric oxide delivery *means being a carrier for a coprecipitation product of (i) a polymer* selected from the group consisting of a polyolefin, a polyether, a polyester, a polyamide, a polyurethane, a peptide, a protein, and a nucleic acid, and (ii) a compound comprising a nitric oxide-releasing [N_2O_2] functional group, wherein said delivery means locally releases a penile erection-inducing amount of nitric oxide to the penis of an impotent male animal.

5,910,317

MIXED COMPOSITIONS FOR TREATING HYPERCHOLESTEROLEMIA

Charles David Broaddus, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of application No. 08/340,012, Nov. 15, 1994, abandoned, which is a continuation of application No. 07/634,983, Dec. 27, 1990, abandoned, which is a continuation of application No. 07/289,472, Dec. 21, 1988, abandoned, which is a continuation of application No. 07/142,037, Jan. 11, 1988, abandoned. This application Apr. 10, 1996, Appl. No. 669,091.

Int. Cl.[6] A61K *9/10;9/14;9/16;35/78*

U.S. Cl. 424—439 **12 Claims**

1. A composition of matter for reducing blood cholesterol levels, comprising:

a) psyllium seed gum or intact or macerated psyllium seeds or psyllium seed coats; and

b) cholestyramine.

5,910,318

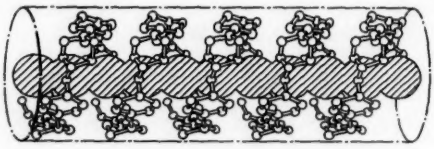
TREATMENT OF IODINE DEFICIENCY DISEASES

William R. Ghent, deceased, late of Kingston, Canada, by R. Allison Ghent, executor, and Bernard A. Eskin, Philadelphia, Pa., assignors to 943038 Ontario Inc., Ontario, Canada

Continuation-in-part of application No. 08/272,308, Jul. 8, 1994, abandoned, which is a continuation of application No. 07/961,038, Oct. 14, 1992, abandoned, which is a continuation of application No. 07/676,170, Mar. 28, 1991, abandoned, said application No. 08/593,467 is a continuation-in-part of application No. 08/388,026, Feb. 13, 1995, Pat. No. 5,589,198. This application Jan. 29, 1996, Appl. No. 593,467.

Int. Cl.[6] A61K *33/18*

U.S. Cl. 424—451 **19 Claims**



1. A method for treating an iodine deficiency disorder selected from the group consisting of breast dysplasia, breast cancer, endometriosis, premenstrual syndrome, ovarian cysts and radiation sickness in a patient in need thereof, by orally administering a pill or capsule comprising a therapeutically effective amount of a non-covalent starch-iodine complex to said patient, wherein the starch in the starch-iodine complex contains from 20% to 100% amylose.

5,910,319

FLUOXETINE ENTERIC PELLETS AND METHODS FOR THEIR PREPARATION AND USE

Neil R. Anderson, West Lafayette; Roger G. Harrison, Zionsville; Daniel F. Lynch, Indanapolis, and Peter L. Oren, Fishers, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 29, 1997, Appl. No. 867,196

Int. Cl.[6] A61K *9/54*

U.S. Cl. 424—458 **39 Claims**

1. An enteric fluoxetine pellet comprising a) a core consisting of fluoxetine and one or more pharmaceutically acceptable excipients; b) an optional separating layer comprising a non-reducing sugar and one or more pharmaceutically acceptable excipients; c) an enteric layer comprising hydroxypropylmethylcellulose acetate succinate (HPMCAS) and one or more pharmaceutically acceptable excipients; d) an optional finishing layer.

5,910,320

TABLET OR CAPSULE HAVING A CONTENT OF STABLE RANITIDINE HYDROCHLORIDE FORM 1

Wilfried Fischer, and Karin Klokkers, both of Holzkirchen, Germany, assignors to Hexal AG, Holzkirchen, Germany

PCT No. PCT/EP94/04044, § 371 Date Aug. 19, 1996, § 102(e) Date Aug. 19, 1996, PCT Pub. No. WO95/15162, PCT Pub. Date Jun. 8, 1995

PCT Filed Dec. 5, 1994, Appl. No. 652,439

Claims priority, application Germany, Dec. 3, 1993, 43 41 310

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—465 **3 Claims**

1. A process for preparing a tablet comprised of ranitidine hydrochloride which comprises forming a powder mixture by mixing, by dry means,

(a) ranitidine hydrochloride Form 1, which lacks the band $\theta=10^{\circ}$ (4.40Å) in the X-ray diffraction spectrum and for which no Form 2 can be detected by X-ray diffractometry after manufacture of the tablet, and

(b) a carrier and/or diluent selected from the group consisting of a mixture of microcrystalline cellulose and disodium carboxymethyl cellulose, silicon dioxide, a mixture of sodium carboxymethyl cellulose and potato starch, microcrystalline cellulose, dicalcium phosphate dihydrate, starch, talc, magnesium stearate, sodium dodecyl sulfate, and polyvinyl pyrrolidone, and

wherein the ratio of carrier and/or diluent to ranitidine hydrochloride is at least 0.46:1 (w/w) and thereafter compressing the powder mixture in the dry state.

5,910,321

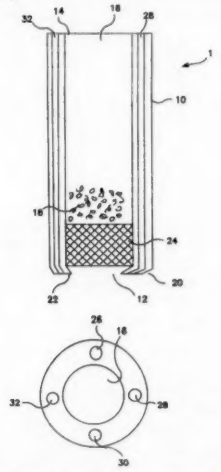
MULTIPLE FLOW PATH DEVICE FOR ORAL DELIVERY OF DISCRETE UNITS

Patrick S.-L. Wong, Burlingame; Nathan Roth, San Francisco, and Vincent J. Ferrari, Foster City, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Provisional application No. 60/028,705, Oct. 18, 1996. This application Oct. 14, 1997, Appl. No. 949,753.

Int. Cl.[6] A61K *9/24*

U.S. Cl. 424—473 **21 Claims**



1. A device for administering one or more active agents to a patient, comprising:

an elongate tubular member having a first end and a second end and comprising a first and a second flow path, wherein at least one of said flow paths contains a quantity of discrete units that comprise an active agent, wherein said first end is configured so that said flow paths are adapted for fluid communication

with an external fluid, and said second end is configured for oral application of suction by the patient so that the quantity of discrete units is entrained in the fluid that is drawn into the device by the patent.

5,910,322

DELAYED RELEASE PHARMACEUTICAL FORMULATION CONTAINING AMOXYCILLIN AND POTASSIUM CLAVULANATE

Ernest Lionel Gilbert Rivett, Arundel; Francis Walter Grimmett, Rustington, and Michael William Hartnell, Worthing, all of United Kingdom, assignors to SmithKline Beecham p.l.c., United Kingdom

PCT No. PCT/EP95/03151, § 371 Date Oct. 2, 1997, § 102(e) Date Oct. 2, 1997, PCT Pub. No. WO96/04908, PCT Pub. Date Feb. 22, 1996

PCT Filed Aug. 8, 1995, Appl. No. 776,909

Claims priority, application United Kingdom, Aug. 17, 1994, 9416600

Int. Cl.[6] A61K *9/26*

U.S. Cl. 424—484 **11 Claims**

1. A pharmaceutical tablet formulation, comprising: a matrix which comprises a β-lactam antibiotic and a β-lactamase inhibitor, and dispersed within said matrix granules in a delayed-release form which comprise a β-lactam antibiotic and a β-lactamase inhibitor, and dispersed within said matrix granules in a rapid-release form which comprise a β-lactam antibiotic and a β-lactamase inhibitor.

5,910,323

INSECTICIDE COMPOSITIONS

M. Stephen Lajoie, Basking Ridge; Amy L. Joseph, Hopewell, both of N.J.; Keith A. Jones, Yardley, Pa., and Anthony E. Winston, East Brunswick, N.J., assignors to Church & Dwight Co., Inc.

Continuation of application No. 07/881,694, May 12, 1992, abandoned. This application Oct. 21, 1993, Appl. No. 139,057.

Int. Cl.[6] A01N *59/00;47/30;31/16;31/02*

U.S. Cl. 424—717 **17 Claims**

1. An aqueous pesticide formulation having a content comprising (1) between about 10–80 weight percent of a fungicidal ingredient selected from the group consisting of alkali metal and ammonium bicarbonates, based on the weight of ingredients; (2) between about 0.5–20 weight percent of a water-soluble polyhydroxy compatibility enhancing ingredient which is in solid form at a temperature below about 10° C., based on the weight of ingredients; (3) between about 0.01–10 weight percent of an insecticidal ingredient, based on the formulation weight; and (4) between about 1–20 weight percent of a surfactant ingredient, based on the weight of water-soluble ingredients.

5,910,324

DEVICE FOR THE MANUFACTURE OF TABLETS

Rudolf Koch, Bad Tölz, Germany, assignor to Courtoy NV, Halle, Belgium

PCT No. PCT/EP96/05569, § 371 Date Aug. 21, 1997, § 102(e) Date Aug. 21, 1997, PCT Pub. No. WO97/23347, PCT Pub. Date Jul. 3, 1997

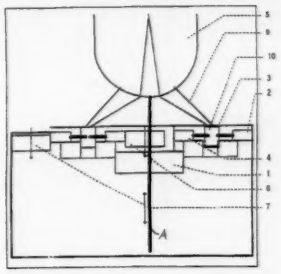
PCT Filed Dec. 12, 1996, Appl. No. 894,541

Claims priority, application Germany, Dec. 22, 1995, 295 20 473 U

Int. Cl.[6] B30B *11/08;15/30*

U.S. Cl. 425—345 **15 Claims**

1. A device for the manufacture of tablets or compacts with at least two compacting tools which define a compacting tool pair and which, in each case, are movable in relation to one another and at least one template interacting with these and with filling means to feed tableting or compacting material into the template, wherein



the compacting tools are movable in relation to one another and are aligned horizontally,

the compacting tools are both positioned on a rotor which is arranged to be set into rotary motion,

on a circumference of the rotor, a plurality of said compacting tool pairs movable in relation to one another are positioned at equal distances and define inner and outer compacting tools,

a pressure roller is located eccentrically to an axle of rotation of the rotor, and

at an edge of a rotating part of the device, two further pressure rollers are located such that via the eccentric pressure roller and these two further pressure rollers, the compacting tools located therebetween are pressable against each other during corresponding passage.

5,910,325

SYSTEM FOR MOULDING TUBULAR GOODS

Johannes Hvidegaard, Brønderslev, Denmark, assignor to Pedershaab A/S, Brønderslev, Denmark

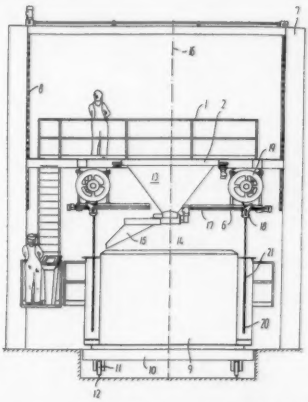
PCT No. PCT/DK96/00122, § 371 Date Dec. 18, 1997, § 102(e) Date Dec. 18, 1997, PCT Pub. No. WO96/30178, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 27, 1996, Appl. No. 930,268

Claims priority, application Denmark, Mar. 28, 1995, 0320/95

Int. Cl.[6] B28B *21/14*

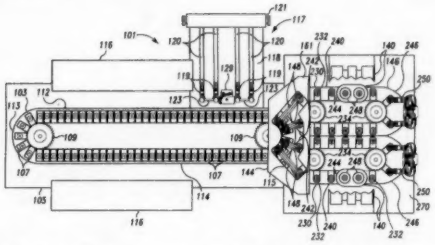
U.S. Cl. 425—456 **10 Claims**



1. A system for molding tubular goods, comprising at least one mold having an inner mold part and an outer mold part defining a mold cavity and an upwardly open annular pouring gate, said system additionally comprising a plurality of vibrators and means for lifting and lowering the vibrators from and into the mold cavity through the annular pouring gate, said vibrators being suspended from a plurality of positioning devices adapted to displace the vibrators radially with respect to the annular pouring gate, wherein

each of the positioning devices is provided with a separate controllable drive unit to displace the vibrators individually.

5,910,326
BLOW MOLDING APPARATUS
David C. Oas, Vandalia, and Jeffrey L. Patrick, Huber Heights, both of Ohio, assignors to Electra Form, Inc., Vandalia, Ohio
Filed Sep. 16, 1997, Appl. No. 931,166
Int. Cl.[6] B29C *31/08;49/64*
U.S. Cl. 425—526 **16 Claims**



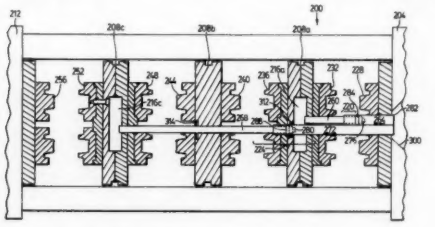
1. A blow molding apparatus configured to receive a plurality of plastic parisons and output a plurality of blow molded containers, the blow molding apparatus comprising:

a support frame;

a parison conveyor attached to the support frame and having a plurality of parison supports and a drive mechanism for driving the parison supports in a circuit, each parison support capable of supporting one of the parisons and the drive mechanism adapted for stepped movement whereby the parison supports are advanced during each stepped movement by a curvilinear distance corresponding to a curvilinear spacing between an even preselected number of the parison supports; and

a parison loader including the preselected number of pick arms, each pick arm adapted to engage and move one of the parisons to support upon one of the parison supports in coordination with each stepped movement of the drive mechanism, so that as the parison supports advance relative to the parison loader during a plurality of stepped movements, each advancing parison support receives one of the parisons, and adjacent pick arms move the parisons to support upon non-adjacent parison supports.

5,910,327
SPRUE BAR ASSEMBLY FOR A STACK MOLD
Robert Dietrich Schad, Toronto, and Zbig Romanski, Etobicoke, both of Canada, assignors to Husky Injection Molding Systems, Canada
Filed Sep. 24, 1997, Appl. No. 936,569
Int. Cl.[6] B29C *45/20*
U.S. Cl. 425—572 **17 Claims**



1. A stack mold comprising:

a fixed mold platen;

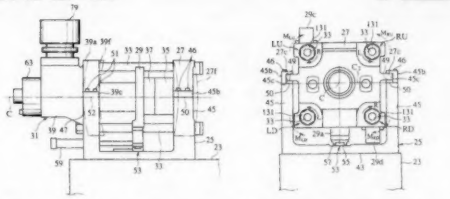
at least one center mold platen having a first side adjacent said fixed mold platen and a second side opposite said first side, said center mold platen including a mold hot runner and being movable with respect to said fixed mold platen;

a driven mold platen distal said fixed mold platen and said at least one center mold platen and movable with respect to said fixed mold platen and said at least one center mold platen, said driven mold platen connected to a mold clamping unit operable to move said at least one center mold platen and said driven mold platen to close said stack mold such that a first complete mold cavity is formed between said fixed mold platen and said first side of said at least one center mold platen and a second complete mold cavity is formed between said second side of said center platen and said driven mold platen;

a sprue bar extending from, and in fluid connection with, said mold hot runner in said at least one center platen, said sprue bar having a bushing distal said mold hot runner to engage an injection nozzle and having a length sufficient to permit said bushing to engage said injection nozzle when said stack mold is closed; and

a sprue bar sleeve for said sprue bar, said sprue bar sleeve extending substantially perpendicularly with respect to said fixed mold platen from an injection machine nozzle reception area toward said mold hot runner such that said bushing of said sprue bar slides within said sprue bar sleeve, said sprue bar sleeve having a sufficient length such that said bushing does not exit said sprue bar sleeve when said center platen is distal said fixed platen and said bushing extending from said sprue bar sleeve to engage said nozzle when said first complete cavity closed.

5,910,328
CLAMPING APPARATUS FOR PRECISE INJECTION MOLDING
Takeo Oshiro; Masao Hirosawa; Hiroshi Kanno; Hidekazu Nakamura; Yasuyuki Ono; Takashi Goto, and Naoki Yamamoto, all of Shizuoka-ken, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 21, 1997, Appl. No. 804,082
Claims priority, application Japan, Feb. 22, 1996, 8-035157; Apr. 10, 1996, 8-088343
This patent is subject to a terminal disclaimer.
Int. Cl.[6] B29C *45/67*
U.S. Cl. 425—595 **19 Claims**



10. A clamping apparatus for clamping a mold in a clamp direction thereof, the clamping apparatus comprising:

a stationary platen for holding a stationary part of the mold;

a clamp cylinder for moving a movable part of the mold in the clamp direction;

a cylinder body integral with a cylinder part of the clamp cylinder;

a first tie-rod and a second tie-rod for connecting the stationary platen to the cylinder body, respectively; and

means for securely fastening the first tie-rod and the second tie-rod to a peripheral part of the stationary platen, the means comprising;

a first thread part formed at an end of the first tie-rod;

a first fastening member engageable with the first thread part in a first rotational direction;

a second thread part formed at an end of the second tie-rod; and

a second fastening member engageable with the second thread part in a second rotational direction different from the first rotational direction.

13. A clamping apparatus mounted on a base frame, for clamping a mold in a clamp direction thereof, the mold being centered to an injection axis, the clamping apparatus comprising:

a stationary platen for holding a stationary part of the mold;

a clamp cylinder for moving a movable part of the mold in the clamp direction;

a cylinder body integral with a cylinder part of the clamp cylinder;

a plurality of tie-rods for securely connecting the stationary platen to the cylinder body;

first symmetrization means for making a deformation of the stationary platen due to clamping symmetrical with respect to a reference plane including the injection axis, the first symmetrization means comprising first support means for fixing, in the reference plane, a central part of the cylinder body between upper and lower parts thereof relative to the base frame, and second support means for supporting, in the reference plane, a central part of the stationary platen between upper and lower parts thereof to be slidable in the clamp direction relative to the base frame.

5,910,329

PROCESS FOR PRODUCING FROZEN YOGURT MIX USING *S. THERMOPHILUS* STARTER CULTURE

Douglas Lynn Willrett, Madison, Wis., and William Robert King, Walnut Creek, Calif., assignors to Rhodia Inc., Cranbury, N.J.

Continuation-in-part of application No. 08/407,227, Mar. 21, 1995, abandoned, which is a continuation of application No. 08/182,260, Jan. 14, 1994, abandoned, which is a continuation-in-part of application No. 07/824,608, Jan. 23, 1992, abandoned. This application Mar. 7, 1996, Appl. No. 612,508.

Int. Cl.[6] **A23C** *9/12*

U.S. Cl. 426—42 **8 Claims**

1. A process for preparing a ripened yogurt base comprising the steps of:

a) adding to water a dry culture medium comprising

i) from about 30 weight percent to about 75 weight percent milk solids,

ii) up to 5 weight percent yeast extract,

iii) up to 5 weight percent phosphate, and

iv) from about 15 to about 65 weight percent of an enzymatically treated lactalbumin, the above weight percents being based on the total weight of the dry culture medium;

b) pasteurizing the resulting mixture;

c) cooling the pasteurized mixture;

d) inoculating the cooled mixture with a lactobacilli-free and bifidobacteria-free culture comprising *S. thermophilus;*

e) culturing the inoculated mixture for a period of time sufficient to develop a yogurt starter culture;

f) inoculating a yogurt base with said yogurt starter culture;

g) culturing the inoculated yogurt base to develop a ripened yogurt base; and

h) cooling the ripened yogurt base to a fermentation rate-reducing temperature.

5,910,330

PROCESS AND APPARATUS FOR SMOKING FOODSTUFFS

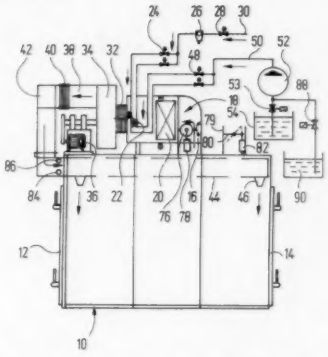
Klaus-Dieter Fessmann, Remshalden, Germany, assignor to Germos-Fessmann GmbH & Co. KG, Germany

Filed Jul. 2, 1997, Appl. No. 886,985

Claims priority, application Germany, Jul. 11, 1996, 196 27 227

Int. Cl.[6] **A21D** *4/00*

U.S. Cl. 426—314 **11 Claims**



1. A process for smoking foodstuffs located in a treatment chamber, which comprises:

(a) supplying to the treatment chamber a treating medium which comprises a mixture of superheated steam and liquid-form smoke vapour,

(b) supplying to the treatment chamber a second medium which includes at least one of superheated steam, hot air and moist air, and

(c) producing the mixture of superheated steam and liquid smoke vapour by mixing super heated steam and liquid-form liquid smoke together in at least one nozzle, the pressure of the superheated steam supplied to the nozzle being from about 2 to about 6 bars and the pressure of the liquid-form liquid smoke supplied to the nozzle being from about 2 to about 10 bars.

5,910,331

METHOD OF FREEZE-PRESERVING VEGETABLES

Naoki Kitagawa, 14, Nishi 18-Chome, 7-jou, Iwamizawa-shi, Hokkaidou068, and Ryoji Nakagawa, 9-6, 5-chome, Kitagou 2-jou, Shiroishi-ku, Sapporo-shi, Hokkaidou003, both of Japan

PCT No. PCT/JP95/02294, § 371 Date Jul. 3, 1996, § 102(e) Date Jul. 3, 1996, PCT Pub. No. WO96/14754, PCT Pub. Date May 23, 1996

PCT Filed Nov. 10, 1995, Appl. No. 669,328

Claims priority, application Japan, Nov. 11, 1994, 6-301605

Int. Cl.[6] **A23B** *7/00*

U.S. Cl. 426—327 **2 Claims**

1. A method for freeze-preserving vegetables comprising:

a first step of adding combined substances including polysaccharide and at least one substance selected from the group consisting of monosaccharide, disaccharides oligo-saccharide and sugar alcohol to vegetables to pickle the vegetables for 24 to 48 hours, so that the combined substances coact to remove water from cells of the vegetables and simultaneously fill both inside and outside of each cell with the combined substances in order to restrict crystallization of water content therein, thereby preventing cell damage during freezing thereof,

a second step of quickly freezing the vegetables pickled in the first steps and

a third step of storing the quickly frozen vegetables in a freezing environment.

5,910,332

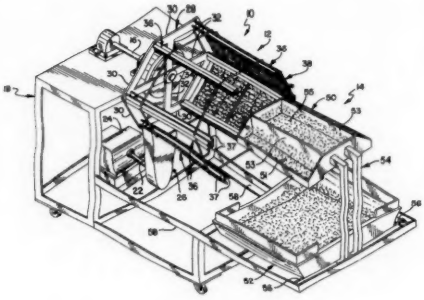
ROTISSERIE BROILER

Abdul Rahman Fakieh, Fakieh Center, Mekka, Saudi Arabia

Filed Jul. 2, 1997, Appl. No. 887,020

Int. Cl.[6] **A23C** *3/00;* **A47J** *37/08;37/04;* **A23L** *3/00*

U.S. Cl. 426—523 **27 Claims**



1. A rotary broiler assembly comprising:

a rotisserie structure rotatable about a fixed axis and having a holding device radially spaced from said fixed axis for holding a food item thereon, whereupon rotation of the rotisserie structure causes the holding device to revolve in an orbital fashion about said fixed axis to define a path of orbital movement; and

a first heat source positioned within said path of orbital movement;

a second heat source positioned outside the path of orbital movement;

said first heat source and said second heat source comprising a heating structure configured to be simultaneously moved as a unit toward and away from said rotisserie structure in a direction generally parallel to the fixed axis of the rotisserie structure, thereby providing access for maintaining said first and second heat sources;

whereby rotation of the rotisserie structure causes the food item to revolve about the first heat source and past the second heat source, wherein said food item is fixed relative to the holding device so that the first heat source cooks one side of the food item and the second heat source cooks an opposite side of the food item as the food item revolves in said orbital fashion.

5,910,333

PHOSPHOR PARTICLE WITH ANTIREFLECTION COATING

Chie-Ching Lin, Taichung; Kuang-Lung Tsai, Hsinchu, both of Taiwan, and Lyuji Ozawa, Hopewell Junction, N.Y., assignors to Industrial Technology Research Institute, Hsin-Chu, Taiwan

Division of application No. 08/796,333, Feb. 7, 1997, Pat. No. 5,792,509. This application Jun. 4, 1998, Appl. No. 90,355.

Int. Cl.[6] **B05D** *5/06;* **C23C** *14/34*

U.S. Cl. 427—69 **7 Claims**

1. A method for uniformly coating phosphor particles with a dielectric, comprising:

selecting the phosphor particles from the group consisting of europium doped yttrium oxide, manganese doped zinc silicate, and europium doped barium magnesium aluminum oxide;

selecting the dielectric from the group consisting of magnesium fluoride, barium fluoride, magnesium oxide, indium phosphide, and calcium fluoride;

providing a reaction chamber and reactant materials suitable for a chemical vapor deposition process whereby said dielectric will deposit on all exposed surfaces in the reaction chamber;

placing the particles inside the chamber;

initiating said deposition process while continuously tumbling the particles; and

terminating the deposition process when a layer of dielectric of a desired thickness has been deposited on the particles.

5,910,334

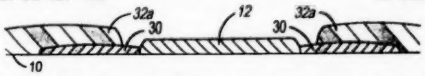
METHOD OF MANUFACTURE FOR A THICK FILM MULTI-LAYER CIRCUIT

Frans Peter Lautzenhiser, Noblesville; John Karl Isenberg, *Rossville; James Edward Walsh, W. Lafayette, and Adam* Wade Schubring, Kokomo, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 16, 1997, Appl. No. 991,685

Int. Cl.[6] **B05D** *5/12*

U.S. Cl. 427—96 **13 Claims**



1. A method of manufacturing a multi-layer circuit, comprising the steps of:

printing, drying and firing a first conductor, forming a portion of a first circuit layer;

forming a feature definition layer of porous dielectric material on a border portion of said conductor adjacent an intended connection region of said conductor by printing and drying a layer of dielectric material on said border portion;

printing a first cover layer of dielectric material on said first circuit layer and at least partially overlapping said feature definition layer, said feature definition layer inhibiting spreading of said first cover layer of dielectric material onto said intended connection region of said conductor prior to and during drying of said cover layer; and

co-firing said feature definition layer and first cover layer.

5,910,335

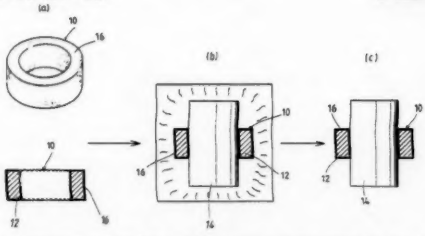
PRODUCT BONDED WITH RESIN PAINT AND THE PROCESS OF BONDING

Teruyoshi Yokoyama, Chita, and Hisashi Watanabe, Gifu, both of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Aichi, Japan

Continuation of application No. 08/438,236, May 9, 1995, abandoned. This application Apr. 30, 1997, Appl. No. 848,347.

Int. Cl.[6] **B05D** *3/02*

U.S. Cl. 427—127 **5 Claims**



1. A process of bonding together two or more parts for use in a motor with anticorrosive resin paint comprising the steps of: applying said anticorrosive resin paint having an adhesive property to one of two or more parts of a motor to be bonded together so that an entire surface of said at least one of said two or more parts of said motor is covered by said anticorrosive resin paint which forms

an anticorrosive film on said entire surface, wherein one of said two parts of said motor is made of magnetic metallic material and other of said two or more parts of said motor are made of nonmagnetic or soft magnetic metallic material, assembling said painted two or more parts of said motor in contact with each other, and baking said assembled two or more parts of said motor so that the contact portions between said two or more parts of said motor are bonded and prevented from rusting by adhesion of said anticorrosive paint only.

5,910,336

PROCESS FOR PRODUCING LIGHT-ABSORBING CHALCOPYRITE FILM

Hiroki Ishihara; Shinichi Nakagawa; Norio Mochizuki, and **Masaharu Ishida, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan**

Filed Mar. 31, 1998, Appl. No. 52,163

Claims priority, application Japan, Mar. 31, 1997, 9-079793

Int. Cl.[6] **B05D** *3/12*

U.S. Cl. 427—240 **6 Claims**

1. A process for producing a light-absorbing chalcopyrite film which comprises the steps of:

applying, by dip or spin coating, at least one solution containing at least either of (a) an organic compound of a metal in Group 1B of the periodic table and (b) an organic compound of a metal in Group 3B of the periodic table on a substrate at least once to thereby form a thin film containing the organic compound (a) and the organic compound (b);

heating the thin film in a reducing or inert gas atmosphere to convert the thin film into a thin metal film comprising the Group 1B metal and the Group 3B metal; and

heating the thin metal film in an atmosphere containing either an element in Group 6B of the periodic table or a compound thereof to thereby convert the thin metal film into a thin chalcopyrite film.

5,910,337

PHASE-AVERAGING RESIST COATING FOR REFLECTIVITY CONTROL

Christopher Francis Lyons, LaGrangeville; Gary Thomas Spinillo, Wappingers Falls, and Robert Lavin Wood, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1992, Appl. No. 871,374

Int. Cl.[6] **B05D** *1/32;5/00*

U.S. Cl. 427—259 **11 Claims**

1. A method of reducing linewidth variations in the patterning of a photoresist layer having a non-uniform thickness in a photolithographic process using light from a partially coherent lens, said method comprising: overcoating a first layer comprising a photoresist composition with a second layer comprising a non-reactive, transparent, water soluble material with a refractive index within ±15% of the refractive index of the photoresist, the second, overcoating, layer of water soluble material being of sufficient thickness to cause about a one wave length phase delay to accumulate in that portion of the exposing light having an incident angle to the second layer upper surface equal to about the arccos of the numerical lens aperture value, said phase delay being in comparison to that portion of the exposing light having an incident angle normal to the second layer upper surface, wherein said phase delay accumulates upon traversing an optical path from the photoresist layer upper surface to the photoresist layer lower surface and reflecting back to the photoresist layer upper surface.

5,910,338

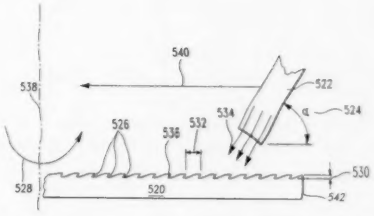
SURFACE PREPARATION TO ENHANCE ADHESION OF A DIELECTRIC LAYER

Arik Donde, Dallas, Tex., assignor to Applied Materials, Inc., Santa Clara, Calif.

Division of application No. 08/639,156, Apr. 26, 1996. This application Mar. 17, 1998, Appl. No. 40,179.

Int. Cl.[6] **B05D** *3/12*

U.S. Cl. 427—290 **15 Claims**



1. A method of preparing a conductive surface of an electrostatic chuck for application of a dielectric layer thereover, wherein said conductive surface has an outer edge, said method comprising the steps of:

(a) attaching said conductive surface to a turntable;

(b) rotating said turntable at a speed appropriate to obtain the desired depth and pitch of grooves to be created in said conductive surface; and

(c) contacting said conductive surface with particles of sufficient size and traveling with sufficient force to create said grooves in said conductive surface, wherein said particles strike said conductive surface at a controlled angle of impingement so as to create grooves providing an undercut in said conductive surface.

5,910,339

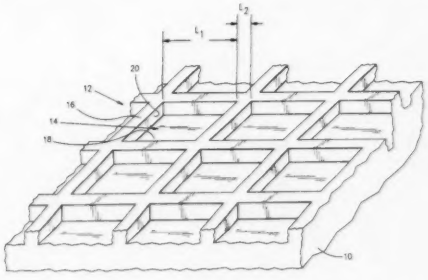
FABRICATION OF ATOMIC STEP-FREE SURFACES

Jack M. Blakely, Ithaca, N.Y.; So Tanaka, Osaka, Japan; Christopher C. Umbach, Aurora, and Rudolf M. Tromp, North Salem, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, and International Business Machines, Corp., Armonk, both of N.Y.

Filed Aug. 22, 1996, Appl. No. 697,315

Int. Cl.[6] **B05D** *3/02*

U.S. Cl. 427—376.2 **8 Claims**



1. A method for forming atomic step-free regions on a wafer surface comprising the steps of:

a) providing a wafer having a top surface;

b) forming a two-dimensional grating on said surface comprising a plurality of flat surfaced troughs and a plurality of upstanding ridges disposed on said surface in the shape of a two-dimensional grating pattern, each of said troughs being surrounded by a corresponding plurality of said ridges, and

being separated from each adjacent one of said troughs by a corresponding one of said ridges, each of said ridges having at least a first sidewall which acts as a barrier region;

c) removing an oxide layer on each of said troughs; and

d) moving atomic steps on said flat surfaced troughs into said barrier regions of said ridges by annealing said top surface of said wafer.

5,910,340

ELECTROLESS NICKEL PLATING SOLUTION AND METHOD

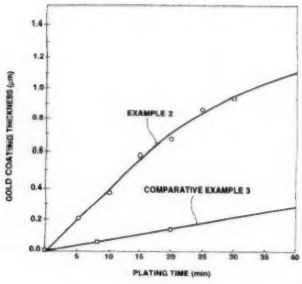
Hiroki Uchida; Masayuki Kiso; Takayuki Nakamura; Tohru Kamitamari; Rumiko Susuki, and Koichiro Shimizu, all of Hirakata, Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Continuation-in-part of application No. 08/719,628, Sep. 25, 1996, abandoned. This application Sep. 17, 1997, Appl. No. 931,832.

Claims priority, application Japan, Oct. 23, 1995, 7-299186; Sep. 17, 1996, 8-266775

Int. Cl.[6] **H01L** *21/302*

U.S. Cl. 427—437 **2 Claims**



1. An electroless nickel plating solution comprising a water-soluble nickel salt in an amount of 0.01. to 1 mol/liter, a reducing agent in an amount of 0.01 to 1 mol/liter, a complexing agent in an amount of 0.01 to 2 mol/liter, and a polythionate or dithionite in an amount of 0.01 to 100 mg/liter.

5,910,341

METHOD OF CONTROLLING THE SPREAD OF AN ADHESIVE ON A CIRCUITIZED ORGANIC SUBSTRATE

Edmond Otto Fey, Vestal; Kenneth Stanley Lyjak, Apalachin, and Donna Jean Trevitt, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1996, Appl. No. 742,139

Int. Cl.[6] **C23C** *14/02*

U.S. Cl. 427—534 **19 Claims**

1. A method of controlling the spread of an adhesive on an organic substrate having a circuitized surface, said method comprising:

exposing the organic substrate to a plasma comprising a fluorine containing entity for a time sufficient to decrease the wettability of said circuitized surface to the adhesive.

5,910,342

PROCESS FOR FORMING DEPOSITION FILM

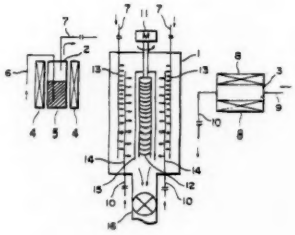
Masaaki Hirooka, Toride; Kyosuke Ogawa, Tokyo; Shunichi Ishihara, Ebina, and Isamu Shimizu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of application No. 08/280,561, Jul. 25, 1994, abandoned, which is a continuation of application No. 08/101,285, Aug. 3, 1993, abandoned, which is a continuation of application No. 07/913,755, Jul. 17, 1992, abandoned, which is a continuation of application No. 07/714,988, Jun. 14, 1991, abandoned, which is a continuation of application No. 07/305,546, Feb. 3, 1989, abandoned, which is a division of application No. 07/161,386, Feb. 22, 1988, Pat. No. 4,835,005, which is a continuation of application No. 06/889,906, Jul. 28, 1986, abandoned, which is a continuation of application No. 06/641,021, Aug. 15, 1984, abandoned. This application Jun. 6, 1995, Appl. No. 469,676.

Claims priority, application Japan, Aug. 16, 1983, 5-149366; Aug. 17, 1983, 5-149758; Aug. 18, 1983, 5-151027

Int. Cl.[6] **B06D** *3/06;* **C23C** *16/00*

U.S. Cl. 427—573 **16 Claims**



1. A process for forming a deposited film suitable for use in semiconductor devices or electrophotographic photosensitive devices on a substrate in a deposition space (A), which comprises the steps of:

(a) heating the substrate in a heating chamber communicating with the deposition space (A);

(b) relocating the heated substrate to a deposition chamber having the deposition space (A);

(c) forming a deposited film on the substrate while heating and rotating the substrate, wherein the film is deposited without exposing a film-forming surface of the substrate to a plasma atmosphere by

(c-1) forming a gaseous activated species or precursor from a starting material in each of a decomposition space (B) and another decomposition space (C),

(c-2) separately introducing the activated species or precursor (i) formed in the decomposition space (B) and the activated species or precursor (ii) formed in the decomposition space (C) into the deposition space (A), the activated species or precursor (i) undergoing chemical interaction with the activated species or precursor (ii) to form the deposited film on the substrate, and

(c-3) transferring the substrate through the deposition space (A), wherein the introducing step (c-2) of the activated species or precursor (i) and the activated species or precursor (ii) is conducted by introducing the activated species or precursor (i) from a plurality of first openings and introducing the activated species or precursor (ii) from a plurality of second openings, said first and second openings being offset from each other and spaced apart from the film-forming surface side of the substrate in the deposition space (A) along the transfer direction; and

(d) cooling the substrate having the deposited film formed thereon in a cooling chamber communicating with the deposition space (A).

5,910,343
DEVICE AT RAILWAY WHEELS AND METHOD FOR OBTAINING SAID DEVICE

Johan Lennart Olofsson, Umeå, Sweden, assignor to Duroc AB, Umea, Sweden

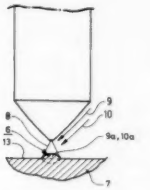
PCT No. PCT/SE94/00920, § 371 Date Apr. 4, 1996, § 102(e) Date Apr. 4, 1996, PCT Pub. No. WO95/09736, PCT Pub. Date Apr. 13, 1995

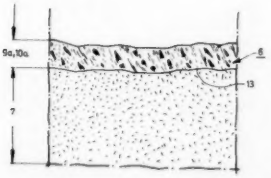
PCT Filed Oct. 4, 1994, Appl. No. 624,394

Claims priority, application Sweden, Oct. 5, 1993, 9303245

Int. Cl.[6] C23C *14/14;4/00;* **C21D** *9/04*

U.S. Cl. 427—597 **9 Claims**





1. A method for making a railway wheel for rolling on a rail, the railway wheel having a body which includes a tread, a flange, and an arcuate transition portion extending between the tread and the flange, the transition portion having a curved surface, said method comprising steps of:

selecting a thickness of surface refined parts to be applied to outer surfaces of the body of the railway wheel so that a Hertzian pressure acting on the railway wheel as a result of the railway wheel rolling on the rail is carried by the body lying beneath the surface refined parts;

preheating the railway wheel to at least 200° C;

applying energy generated by laser radiation to at least one local area selected from a group consisting of the tread, the flange, and the transition portion of the body of the railway wheel to create a melt on the outer surfaces of the body while simultaneously adding at least one material to the melt;

cooling the melt and the at least one material to form the surface refined parts having said thickness on the outer surfaces of the body of the railway wheel; and

machining the surface refined parts to achieve a predetermined surface finish.

5,910,344
METHOD OF MANUFACTURING A MAGNETORESISTIVE SENSOR

Naoya Hasegawa; Masamichi Saito, and Akihiro Makino, all of Niigata-ken, Japan, assignors to Alps Electric Co., Ltd., Japan

Division of application No. 08/944,665, Oct. 6, 1997. This application Oct. 20, 1998, Appl. No. 175,593.

Claims priority, application Japan, Oct. 7, 1996, 8-266359

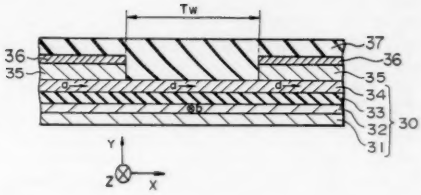
Int. Cl.[6] B29C *35/08*

U.S. Cl. 427—599 **4 Claims**

1. A method of manufacturing a magnetoresistive sensor comprising:

providing at least two ferromagnetic layers with a non-magnetic layer therebetween;

providing a coercive force increasing layer comprising a first antiferromagnetic material adjacent to one of the ferromagnetic layers, for increasing the coercive force of the ferromagnetic layer to pin the magnetization reversal thereof, the other ferromagnetic layer having free magnetization reversal; and



providing an antiferromagnetic layer comprising a second antiferromagnetic material adjacent to the other ferromagnetic layer having free magnetization reversal, for applying a longitudinal bias to the other ferromagnetic layer to induce magnetic anisotropy due to a unidirectional exchange bias magnetic field to stabilize a magnetic domain;

wherein the magnetization direction of the ferromagnetic layer having pinned magnetization reversal crosses at substantially right angles the magnetization direction of the ferromagnetic layer having free magnetization reversal without an external magnetic field, the second antiferromagnetic layer for applying the longitudinal bias is formed on either side of the magnetic sensing region of the ferromagnetic layer having free magnetization reversal with a space therebetween, which equals to a predetermined track width corresponding to the width of the magnetic sensing region, so as to be adjacent to the ferromagnetic layer, the unidirectional magnetic anisotropy induced in the other ferromagnetic layer having free magnetization reversal and provided adjacent to the second antiferromagnetic layer for applying the longitudinal bias is produced by forming the other ferromagnetic layer while applying a magnetic field thereto or performing heat treatment in a magnetic field after formation of the other ferromagnetic layer, and the magnetization direction of the ferromagnetic layer having pinned magnetization reversal and adjacent to the coercive force increasing layer is determined in a permanent magnetization step after a step for determining the direction of the magnetic anisotropy of the other ferromagnetic layer having free magnetization reversal.

5,910,345
METHOD OF COATING BULLETS

William Luban, c/o Pemco Consolidated Services, 20W420 Rooke Ct., Downers Grove, Ill. 60516-5168

Filed Sep. 18, 1997, Appl. No. 932,721

Int. Cl.[6] B06B *1/00*

U.S. Cl. 427—600 **19 Claims**

1. A method of coating metal bullets comprising the steps of:

a) heating the bullets to be coated to a temperature sufficient to open the pores thereof but insufficient to cause a change in shape of the bullets with powdered molybdenum disulfide;

b) contacting the heated bullets and molybdenum disulfide with an impacting instrumentality in a vibratory agitator to drive the molybdenum disulfide against the bullets to be deeply absorbed therein; and

c) contacting the bullets and molybdenum disulfide with a polishing or burnishing agent.

5,910,346
TUBULAR MATERIALS

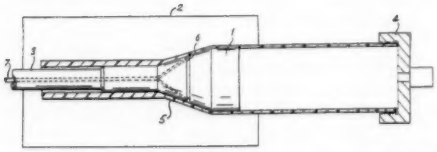
Ian MacMillan Ward; Gordon Craggs, both of Leeds; Alan Selwood, Harrogate, and Ajay Kumar Taraiya, Leeds, all of United Kingdom, assignors to BTG International Limited, London, United Kingdom

Continuation of application No. 08/295,005, Aug. 24, 1994, abandoned, which is a continuation of application No. 08/013,164, Feb. 2, 1993, abandoned, which is a continuation of application No. 07/887,392, May 21, 1992, abandoned, which is a continuation of application No. 07/767,365, Sep. 30, 1991, abandoned, which is a continuation of application No. 07/439,888, Nov. 20, 1989, abandoned. This application Jun. 7, 1995, Appl. No. 479,518.

Claims priority, application United Kingdom, Nov. 30, 1988, 8827967

Int. Cl.[6] **B29D** *22/00*

U.S. Cl. 428—36.9 **7 Claims**



1. A biaxially oriented open-ended polyolefin tube of wall thickness 0.1 mm or greater having uniform cross-section wherein the 10 sec creep modulus at 0.1% strain measured using standard dead loading creep method is at least 3.7 GPa in the axial direction and is at least 1.7 GPa in the hoop direction.

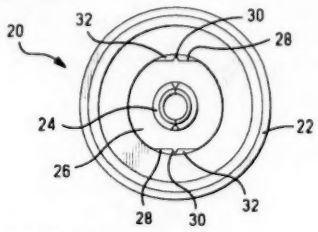
5,910,347
PRECISION MOLDED CYLINDERS

William Vito Pauza, Palmyra, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 9, 1996, Appl. No. 677,060

Int. Cl.[6] **H01R** *13/405;* **B29D** *23/00*

U.S. Cl. 428—36.9 **5 Claims**



1. A molded cylinder comprising:

an outer circumferential cross section profiled to be partially circular, the circumferential cross section having at least one chordal section extending between and within the circumferential cross section, and;

a flashing projection extending along the chordal section.

5,910,348
SEPARATOR FILM

Leonard John Hart-Smith, Long Beach, and Norman R. Byrd, Villa Park, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 6, 1996, Appl. No. 761,556

Int. Cl.[6] **A61F** *13/02;* **B32B** *7/12;27/00;9/00*

U.S. Cl. 428—41.5 **11 Claims**

1. A prepreg composite material for use in forming a cured article, comprising:

a discrete layer of a fiber-reinforced resin composite material having a resin base; and

a discrete polyurethane separator film applied to a side of said discrete composite material layer for providing a non-sticking surface on said composite material layer, said discrete separator film including no fibers, wherein said separator film is degradable at a ceiling temperature and said discrete layer of a fiber-reinforced resin composite material is substantially free of said separator film.

5,910,349
DISPLAY LABEL AND METHOD OF PRODUCING SAME

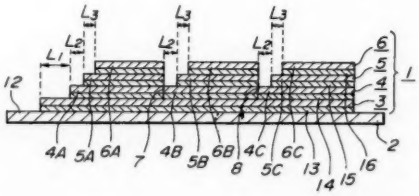
Hiroshi Tsukuda, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Apr. 18, 1997, Appl. No. 839,308

Claims priority, application Japan, Apr. 22, 1996, 8-100233

Int. Cl.[6] **B32B** *7/06*

U.S. Cl. 428—42.3 **2 Claims**



1. A multiple layer display label for displaying recorded contents to be adhered to a housing accommodating an audio, video, data, or other information recording medium, comprising:

a release sheet having a silicone-based coating on a coating surface of the release sheet;

a mount sheet having an adhesive agent on a first surface of the mount sheet, wherein the adhesive agent adheres to the coating surface of the release sheet, the mount sheet having an area commensurate with an adhesion surface of the housing;

a first label member laminated on the mount sheet, the first label member being smaller than the mount sheet when respective ends of the mount sheet and the first label member are aligned, wherein the first label member is a separable member that may be selectively divided into a plurality of pieces, and which has an adhesive agent on a first surface such that the adhesive agent serves to laminate the first label member to a second surface of the mount sheet;

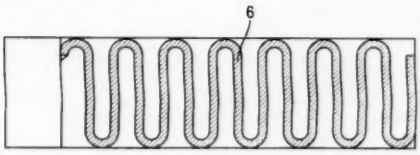
a second label member laminated on the first label member, the second label member having a plurality of pieces which are smaller than the pieces of the first label when respective ends of the first label member and the second label member are aligned, and an adhesive agent on a first surface such that the adhesive agent serves to laminate the second label member to a second surface of the first label member; and

a pre-determined number of third to nth label members, each of the third to nth label members having adhesive agents on a first surface that serve to laminate the third to nth label members to a second surface of the second to nth−1 label members, respectively, wherein the third to nth label members are comprised of a plurality of pieces which are smaller than the pieces of the second to nth−1 label members, respectively when respective ends of the second to nth−1 label members and the third to nth label members are aligned, wherein the adhesive agents coated on the surfaces of the mount sheet and the label members have peeling strengths per unit area which are gradually smaller from the mount sheet toward the third to the nth label members.

5,910,350
STARCH FOAM PANEL

Juergen Loracks, Rees; Winfried Pommeranz, Enger, and Harald Schmidt, Emmerich, all of Germany, assignors to Bio-Tec Biologische Naturverpackugen GmbH, Emmerich, Germany

PCT No. PCT/EP95/03488, § 371 Date Mar. 5, 1997, § 102(e) Date Mar. 5, 1997, PCT Pub. No. WO96/07539, PCT Pub. Date Mar. 14, 1996
PCT Filed Sep. 5, 1995, Appl. No. 793,939
Claims priority, application Germany, Sep. 6, 1994, 44 31 755
Int. Cl.[6] B32B *5/26;9/06;31/08;* G09F *9/00*
U.S. Cl. 428—71 17 Claims

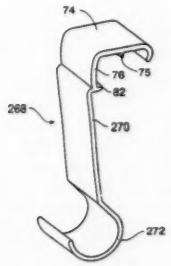


1. A panel, comprising:
a starch foam core which is comprised of starch, which is one of resilient foam or hardened foam; and which has a form selected from the group consisting of a plurality of strands which are straight and in essentially parallel alignment with one another, and a plurality of strands which are bent and arranged in an undulating path; and
at least one outer layer comprised of sheet material and provided directly on a surface of the starch foam core in engaging contact therewith;
wherein the panel is prepared in a continuous process.

5,910,351
MULTI-PURPOSE HOOK

Bradley C. Davis, Irvine, and Michael K. Boone, Laguna Beach, both of Calif., assignors to Boone International, Inc., Corona, Calif.

Continuation-in-part of application No. 08/526,707, Sep. 11, 1995, Pat. No. 5,658,635. This application Jun. 17, 1997, Appl. No. 877,615.
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—100 30 Claims

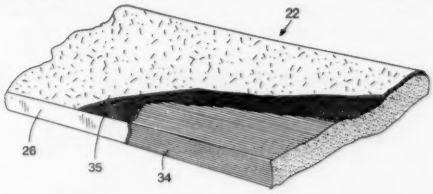


1. A multi-purpose hook comprising:
a first member having a generally flat shape,
a hook formed integrally with and extending from a first end of said first member, said hook having a half-cylindrical cross-sectional shape, and
a grip formed integrally with a second end of said first member.

5,910,352
WOOD STRUCTURAL MEMBER HAVING PLURAL MULTIPLE-FIBER REINFORCEMENTS

Daniel A. Tingley, 3310 SW. Willamette Ave., Corvallis, Oreg. 97333

Division of application No. 08/330,438, Oct. 28, 1994, Pat. No. 5,648,138, which is a continuation-in-part of application No. 08/206,411, Mar. 4, 1994, Pat. No. 5,641,553, which is a continuation-in-part of application No. 08/037,580, Mar. 24, 1993, Pat. No. 5,362,545. This application May 29, 1997, Appl. No. 865,627.
This patent is subject to a terminal disclaimer.
Int. Cl.[6] B32B *5/08;5/16*
U.S. Cl. 428—114 19 Claims



1. A wood structural member having plural wood segments attached to form a unitary structure, comprising:
multiple synthetic fiber reinforcements, each of which including plural strands of different first and other synthetic fibers held within a resin casing having first and second major surfaces, at least one of the synthetic fiber reinforcements being bonded by a nonepoxy adhesive to at least one of the wood segments of the wood structural member, and each of the major surfaces of the resin casing to which a wood segment is adhered by nonepoxy adhesive being conditioned to provide for the non-epoxy adhesive an effective bonding interface between the synthetic fiber reinforcement and the wood segment.

5,910,353
MODIFIED PAPER COMPOSITE

Kenneth J. Machlica, Wrightstown, Wis., assignor to Dunsirn Industries, Inc., Neenah, Wis.

Filed Nov. 10, 1997, Appl. No. 967,629
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 16 Claims

1. A composite material having two outer paper components and a plastic core component therebetween, said core component is high density polyethylene having a thickness dimension of about 1.5 mils to about 3.5 mils and comprises a laminate of first and second outer plys, each of which is bias cut at an angle less than 90%, and an inner ply, each said outer ply having a bias cut oriented opposite the bias cut of said other outer ply, such that said core component is cross-laminated.

5,910,354
METALLURGICAL INTERCONNECT COMPOSITE

Carmine G. Meola, Elkton, Md.; Daniel D. Johnson, Yorklyn, Del.; Donald R. Banks, Eau Claire, Wis., and Joseph G. Ameen, Newark, Del., assignors to W.L. Gore & Associates, Inc., Newark, Del.

Filed Mar. 4, 1997, Appl. No. 810,846
Int. Cl.[6] B32B *27/14;* H05K *1/00*
U.S. Cl. 428—198 25 Claims

1. A metallurgical interconnect composite comprising:

an open cell, porous material having an x, y and z-axis, and within selected areas through said porous material, in the z-axis direction, said material is coated with a conductive metal so as to form a continuous path of conductivity through said selected areas, said path of conductivity terminating in solder coated areas on opposite surfaces of said porous material, said solder coated areas operable to form a metallurgical bond with an electronic component.

5,910,355

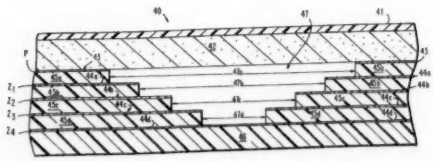
PRESSURE ACTIVATED SWITCHING DEVICE

Lester E. Burgess, Box 522, Swarthmore, Pa. 19081

Division of application No. 08/429,683, Apr. 27, 1995, Pat. No. 5,695,859. This application Oct. 23, 1997, Appl. No. 956,582.

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 **7 Claims**



1. A pressure actuated switching device, which comprises:

a) a layer of compressible piezoresistive material;

b) a base below said layer of piezoresistive material;

c) at least two insulative spacer elements positioned between said piezoresistive material and said base, said spacer elements each having an upper layer of conductive material, and each insulative spacer element having at least one aperture, said apertures being aligned, configured, and dimensioned to form at least one void defined by stepped sides said void has a relatively large diameter opening adjacent the piezoresistive material and a relatively small diameter opening adjacent the base.

5,910,356

ADHERENT POLYESTER FILM LAMINATE

Toshifumi Ishikawa; Shinichiro Okada; Masayuki Fukuda, and Hiroshi Tomita, all of Sagamihara, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 5, 1997, Appl. No. 795,786

Claims priority, application Japan, Feb. 8, 1996, 8-022419; May 20, 1996, 8-124574; May 27, 1996, 8-131732

Int. Cl.[6] B32B *27/08;27/16;27/18;27/36*

U.S. Cl. 428—215 **14 Claims**

1. An adherent polyester film laminate (A) having a coating layer of a composition formed on one side or both sides of a polyester film, the composition comprising, as main components,

(i) an aqueous polyester having a secondary transition point of 40 to 85° C. and

(ii) an amount of a fatty acid bisamide effective to improve at least one property of the coated laminate selected from the group consisting of adhesion, transparency, slipperiness, surface hardness, abrasion resistance and anti-reflection.

5,910,357

SEPARATION MEMBRANE AND METHOD OF PRODUCING THE SAME, AND SHAPE MEMORY POLYMER COMPOSITION

Hisao Hachisuka; Yoshihiko Kondo; Kenichi Ikeda; Hitoshi Takano, and Amane Mochizuki, all of Osaka, Japan, assignors to Nitto Denko Corporation, Ibaraki, Japan

Filed Jul. 10, 1997, Appl. No. 889,761

Claims priority, application Japan, Jul. 12, 1996, 8-183868; Oct. 28, 1996, 8-285453

Int. Cl.[6] B01D *39/00;39/14*

U.S. Cl. 428—315.5 **22 Claims**

1. A porous separation membrane comprising a porous shape memory polymer.

18. A shape memory polymer composition comprising a mixture of a shape memory polymer and at least one polymer that is soluble in the shape memory polymer.

5,910,358

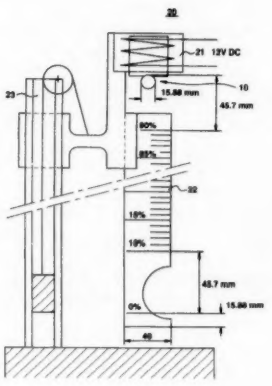
PVC-FREE FOAMED FLOORING AND WALL COVERINGS

Johan A. Thoen, Terneuzen, Netherlands; Kyung W. Suh, Granville, Ohio; James G. Kennedy, Sint Jansteen, Netherlands, and Creston D. Shmidt, Nashport, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 6, 1996, Appl. No. 746,035

Int. Cl.[6] B32B *3/26*

U.S. Cl. 428—316.6 **22 Claims**



1. A multilayer resilient cushion foam floor or wall covering comprising a top layer, wherein the top layer includes:

(a) a transparent upper wear layer comprised of at least one melt processed polyolefin polymer or at least one solvent dispersed polyolefin polymer or both,

(b) a solvent dispersed or melt processed print layer comprised of at least one polyolefin polymer and interposed below the transparent upper wear layer, and

(c) an optional melt processed polyolefin polymer or textile intermediate reinforcement layer interposed below the print layer,

wherein the transparent upper wear layer and the print layer have a combined thickness of from about 50 to about 800 microns and the optional intermediate layer has a thickness of from about 5 to about 500 microns,

wherein the top layer is integrated with a foamed backing layer comprised of a latex composition, a melt processed polyolefin composition of at least one polyolefin polymer, or a solvent dispersed polyolefin composition of at least one polyolefin polymer, and

wherein at least one layer selected from the group cosisting of the transparent upper wear layer, the print layer, the optional intermediate reinforcement layer, when present, and the foam backing layer comprises a substantially linear ethylene polymer characterized as having

(i) a melt flow ratio, $I_{10}/I_2 \geqq 5.63$,

(ii) a molecular weight distribution, M_w/M_n, as determined by gel permeation chromatography and defined by the equation:

$$(M_w/M_n) \leqq (I_{10}/I_2) - 4.63,$$

(iii) a gas extrusion rheology such that the critical shear rate at onset of surface melt fracture for the substantially linear ethylene polymer is at least 50 percent greater than the critical shear rate at the onset of surface melt fracture for a linear ethylene polymer, wherein the substantially linear ethylene polymer and the linear ethylene polymer comprise the same comonomer or comonomers, the linear ethylene polymer has an I_2 M_w/M_n and density within ten percent of the substantially linear ethylene polymer and wherein the respective critical shear rates of the substantially linear ethylene polymer and the linear ethylene polymer are measured at the same melt temperature using a gas extrusion rheometer,

(iv) a single differential scanning calorimetry, DSC, melting peak between −30 and 150° C., and

(v) a short chain branching distribution index greater than about 50 percent, or

a homogeneously branched linear ethylene polymer characterized as having a molecular weight distribution less than 3 and a short chain branching distribution index equal to or greater than 50 percent.

5,910,359

RECORDING SHEET AND IMAGE FORMING METHOD

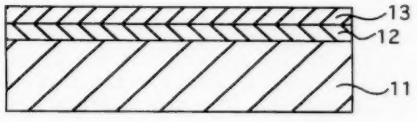
Takashi Kobayashi, and Tatsuya Nomura, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 3, 1996, Appl. No. 725,179

Claims priority, application Japan, Oct. 4, 1995, 7-282496; Jun. 14, 1996, 8-175910

Int. Cl.[6] B41M *5/00;* **B41J** *2/01*

U.S. Cl. 428—327 **12 Claims**



7. A recording sheet comprising an opaque support and a transparent colorant-receptive layer provided thereon, in which the colorant-receptive layer comprises crosslinked cationic polymer particles having a mean particle diameter of not more than 200 nm and a water-soluble resin, the recording sheet having a glass of not lower than 70%.

5,910,360

GLASS ARTICLE CARRYING A TRANSPARENT PROTECTIVE LAYER WHICH IS RESISTANT TO ABRASION AND CAN BE LABELED AND PROCESS FOR OBTAINING IT

Jean-Marc Boumera, Serres-Sainte-Marie; Maurice Bourrel; Jean-Michel Chabagno, both of Pau, all of France; Hendrikus Johannes Cornelis Gijsen, Oost-Souburg, Pays-Bas, and Leendert Cornelis Hoekman, Goes, Pays-Bas, both of Netherlands, assignors to Elf Atochem Vlissingen B.V., Netherlands

Filed Dec. 10, 1997, Appl. No. 988,069

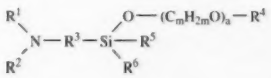
Claims priority, application France, Jun. 11, 1996, 96 07234; Mar. 7, 1997, 97 02728; WIPO, Jun. 4, 1997, PCT/FR97/00988

Int. Cl.[6] B32B *17/06*

U.S. Cl. 428—341 **37 Claims**

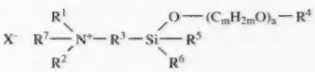
1. A glass article carrying a coating which is practically transparent, capable of being labeled and resistant to abrasion, said coating resulting from the application, onto the glass surface, of at least one monoaminosilane and of at least one lubricating substance, the monoaminosilane(s) corresponding to the general formula:

I



or in its quaternized form:

II



in which:

each of R^1 and R^2, which are identical or different, denotes a hydrogen atom or an allyl group containing from 1 to 4 carbon atoms,

R^3 is a linear or branched alkylene group containing 2 to 11 carbon atoms, an oxyalkylene or polyoxyalkylene group containing from 2 to 4 carbon atoms in the alkylene chain, said oxyalkylene or polyoxyalkylene group being bonded to the silicon via a carbon atom,

R^4 denotes an alkyl group containing 1 to 4 carbon atoms,

each of R^5 and R^6, which are identical or different, denotes an alkyl group containing 1 to 4 carbon atoms or a group $—O—(C_nH_{2n}O)_b—R^4$ in which R^4 has the above meaning,

each of m and n, which are identical or different, denotes the integer 2, 3 or 4,

each of a and b, which are identical or different, denotes the integer 0, 1 or 2,

R^7 denotes a hydrogen atom or an alkyl group containing from 1 to 4 carbon atoms, and

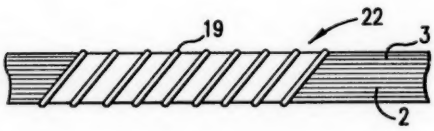
X^- is an anion, said coating having been heat treated at a sufficient temperature and for a sufficient time to provide an abrasion resistance of at least 200N in the dry and at least 100N in the wet state, a labelability of at least 80%, and an appearance having a value of 0 or 1, the dry quantity of the at least one monoaminosilane being between 10^{-4} mg/cm^2 to 5×10^{-2} mg/cm^2, and the dry quantity of the lubricating substance being between 5×10^{-2} mg/cm^2 and 5×10^{-2} mg/cm^2.

5,910,361

HYBRID YARN FOR COMPOSITE MATERIALS WITH THERMOPLASTIC MATRIX AND METHOD FOR OBTAINING SAME

Jean Guevel, Viriat; Marc Francois, Charbonnieres les Bains, and Guy Bontemps, Tenay, all of France, assignors to SA Schappe, Charnoz, France

Filed Jul. 15, 1991, Appl. No. 730,199
Claims priority, application France, Jul. 13, 1990, 90 09398
Int. Cl.[6] D02G *3/06;3/02*
U.S. Cl. 428—364 7 Claims



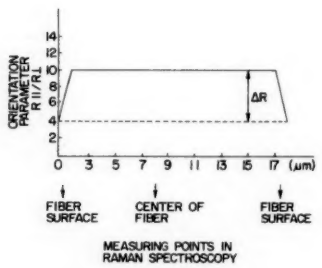
1. A hybrid yarn for composite materials with a thermoplastic matrix, comprising an intimate mixture, of spun yarns of reinforcing fibers and spun yarns of thermoplastic matrix fibers, each of the spun yarns of fibers having been obtained by cracking with slow, gradual stretching of multifilaments, and, after stretching, parallel fibers of said mixture, having been wrapped by a continuous filament of thermoplastic material.

5,910,362

POLYOLEFIN FIBER AND NON-WOVEN FABRIC PRODUCED BY USING THE SAME

Kazuhiko Aratake, Osaka; Masahiko Taniguchi, Chiba, and Hidemi Ito, Shiga, all of Japan, assignors to Chisso Corporation, Osaka, Japan

PCT No. PCT/JP97/01429, § 371 Date Sep. 30, 1997, § 102(e) Date Sep. 30, 1997, PCT Pub. No. WO97/40216, PCT Pub. Date Oct. 30, 1997
PCT Filed Apr. 24, 1997, Appl. No. 930,673
Claims priority, application Japan, Apr. 25, 1996, 8-104867
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—364 7 Claims



1. A polyolefin fiber comprising a surface portion of a low-orientation domain and an inner portion of a high-orientation domain, wherein the low-orientation domain has an orientation parameter, as measured by Raman spectroscopy, smaller than that of the high-orientation domain by 2.2 or more, but less than 8.0, and the fiber has a ratio of the area of the cross-section of the low-orientation domain to the area of whole cross-section of the fiber (area percentage) of 5%or more, but less than 40%.

5,910,363

POLYESTERS OF 2,6-NAPHTHALENEDICARBOXYLIC ACID HAVING IMPROVED HYDROLYTIC STABILITY

Martin Emerson Rogers, Blountville, and Sarah Jayne Webb, Gray, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of application No. 08/866,468, May 30, 1997. This application May 6, 1998, Appl. No. 73,514.
Int. Cl.[6] D02G *3/00;* C08F *20/00*
U.S. Cl. 428—365 21 Claims

1. An article of paper machine fabric used in a papermaking machine which is essentially a fibrous structure comprising monofilament yarns wherein said monofilament yarns comprise a polyester composition further comprising:

(A) 95 to 99.0% by weight of a polyester comprising from about 85 to 100 mole % of 2,6-naphthalenedicarboxylic acid and 85 to 100 mole % of at least one aliphatic glycol having from 2 to 16 carbon atoms, based on the total mole percentage for the glycol portion and for the acid portion of said polyester each equalling 100 mole %, and

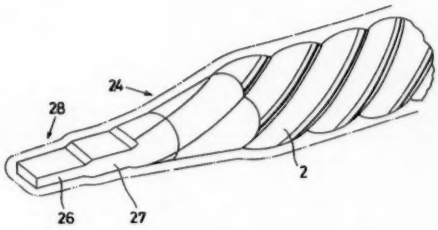
(B) 0.1 to 5.0% by weight of one or more polymeric carbodiimides.

5,910,364

GUIDE WIRE AND A METHOD OF MAKING THE SAME

Naohiko Miyata; Masashi Momota, and Minoru Saruta, all of Aichi-ken, Japan, assignors to Asahi Intecc Co., Ltd., Aichi-ken, Japan

Filed Nov. 7, 1996, Appl. No. 744,316
Claims priority, application Japan, Jul. 10, 1996, 8-181022
Int. Cl.[6] A61M *25/09*
U.S. Cl. 428—375 3 Claims



1. A guide wire comprising:

a core wire prepared by twisting a plurality of thin threads, a distal end of said core wire being diametrically reduced to be a thinnest tip:

a resin layer coated on the outer surface of said core wire; and

the thinnest tip being treated by tightly uniting together twisted ends of the thinnest threads;

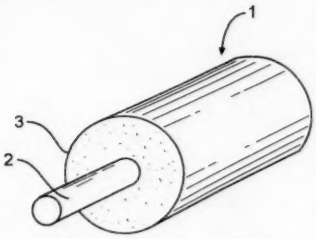
said thinnest tip of the leading end of said core wire being squelched into a flat-shaped configuration so as to form a flat portion; and

said flat portion having a near distal end side flat section at a leading edge of the thinnest tip, and a far distal end side flat section adjacent to the near distal end side flat section, and the flat portion being bent in a zigzag manner upward and downward along an axis to give the far distal end side flat section a level higher than the near distal end side flat section with respect to said axis.

5,910,365
SELF-EXTINGUISHING CABLE RELEASING LOW QUANTITIES OF TOXIC AND CORROSIVE SMOKES AND GASES

Luca Castellani, Corsico, Italy, assignor to Pirelli Cavi S.P.A., Milano, Italy

Filed Jul. 24, 1997, Appl. No. 899,793
Claims priority, application Italy, Jul. 30, 1996, MI96A1625
Int. Cl.[6] B32B *15/00*
U.S. Cl. 428—379 **46 Claims**



1. Cable comprising at least a conductor (**2**) and an outer coating (**3**), self-extinguishing, releasing low quantities of toxic and corrosive smokes and gases, characterized in that said outer coating (**3**) comprises:

a) a polymer base including from 30 to 60 parts of a thermoplastic polyester and from 40 to 70 parts of a silicone-polyimide polymer;

b) at least 0.5 parts of an anti-hydrolysis agent of the thermoplastic polyester and at least 0.25 parts of a selected antioxidant agent per each 100 parts by weight of said base;

said antioxidant agent being such that the coating (**3**) shows, after a 10-day aging at 175° C. in a hot air oven, a value of percent elongation at break not lower than 80% of the starting value.

5,910,366
THIN FILM COMPOSITE MEMBRANE AS BATTERY SEPARATOR

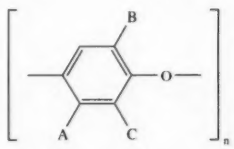
Geeta Chowdhury, Ottawa; William Adams, Nepean; Brian Conway, and Srinivasa Sourirajan, both of Ottawa, all of Canada, assignors to The University of Ottawa, Ottawa, Canada

Division of application No. 08/754,741, Nov. 21, 1996, Pat. No. 5,798,180, which is a continuation of application No. 08/297,875, Aug. 30, 1994, abandoned. This application Mar. 12, 1998, Appl. No. 41,037.
Claims priority, application Canada, Jun. 14, 1994, 2125840
Int. Cl.[6] B32B *9/04;23/04*
U.S. Cl. 428—379 **4 Claims**

1. An ion-selective electrode, comprising:

an electrode; and

a polyaromatic ether coated on said electrode, said polyaromatic ether having the formula



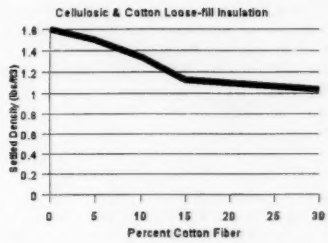
wherein n is a finite integer greater than 0, A is selected from the group consisting of sulfonic acid and carboxylic acid groups and B and C are selected from the group consisting of lower alkyl and phenyl groups,

said polyaromatic ether being coated on the electrode to form an ion-selective electrode having an ion-exchange capacity of 1.5–1.9 meq/g and a resistivity less than 1.2Ω/cm^2.

5,910,367
ENHANCED CELLULOSE LOOSE-FILL INSULATION

Tod Mitchell Kean; Michael James Kean, both of Chandler, and Dennis Dee Smith, Mesa, all of Ariz., assignors to Boricel Corporation, Chandler, Ariz.

Filed Jul. 16, 1997, Appl. No. 895,165
Int. Cl.[6] D02G *3/00;* **E04B** *1/74*
U.S. Cl. 428—393 **6 Claims**



1. A loose fill insulating material consisting essentially of cellulose fiber and about from 0.5% to 40.0% by weight of natural textile fiber in the form of individual fibers or small clumps of fibers, and optionally at least one fire retardant material.

5,910,368
NONWOVEN HYDROPHILIC BASED ON POLYLACTIDES

Philippe Ehret, Fortschwihr, France, assignor to Fiberweb France SA, Biesheim, France

Filed Oct. 4, 1996, Appl. No. 725,770
Claims priority, application France, Oct. 6, 1995, 95 11957
Int. Cl.[6] B32B *9/04;* **C08G** *63/08*
U.S. Cl. 428—411.1 **19 Claims**

1. A nonwoven web comprising thermoplastic fibers consisting essentially of polymer derived from lactic acid, said nonwoven web being treated with a polyether silicone copolymer, thereby making the web permanently hydrophilic.

5,910,369
METHODS FOR PROTECTING SUBSTRATES WITH URETHANE PROTECTIVE COATINGS

Michael N. Macris, Sandy, and David Dobney, Salt Lake City, both of Utah, assignors to American Polymer, Inc., Sandy, Utah

Division of application No. 08/403,583, Mar. 14, 1995, abandoned, which is a continuation of application No. 08/056,250, Apr. 30, 1993, abandoned, which is a continuation-in-part of application No. 07/877,840, May 1, 1992, abandoned. This application Jun. 7, 1995, Appl. No. 475,591.
Int. Cl.[6] B32B *27/00;* **C08K** *3/20*
U.S. Cl. 428—423.1 **19 Claims**

1. A method for protecting a substrate with a two layer protective coating, the method comprising:

priming a substrate with a water-based primer formed from a primer composition comprising an acrylic copolymer and water to yield a primed substrate with a polymerized primer layer;

wherein the primer layer is at least substantially clear;

forming a composition by mixing a polyol and an aliphatic polyisocyanate;

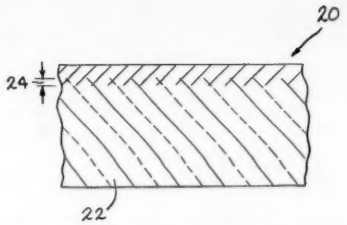
wherein said polyol is selected from the group consisting of saturated polyester polyols having an equivalent weight ranging from about 150 to about 1300, acrylic polyols, polyether polyols, ethylene glycol and propylene glycol; and

applying the composition under ambient conditions onto the primer layer and allowing the composition to form a saturated, aliphatic urethane protective topcoat under ambient conditions;

wherein said topcoat is at least substantially clear;

wherein said primer layer prevents the topcoat from causing the substrate to appear substantially darkened after the topcoat has hardened on the primer layer compared to the appearance of the substrate before application of the two layer protective coating;

whereby the substrate is protected by the ability of the topcoat to substantially resist penetration by unwanted substances and whereby unwanted substances applied onto the topcoat can be removed with a solvent without substantially degrading the topcoat.



coefficient of thermal expansion of the coating holds the coating in compression on the substrate.

5,910,370
POLYMERIC FILM

Naomi Katsura, Chiyoda-machi; Hikaru Takeuchi, Ushikumachi, and Yuka Watanabe, Tokyo, all of Japan, assignors to ICI Americas Inc, Wilmington, Del.

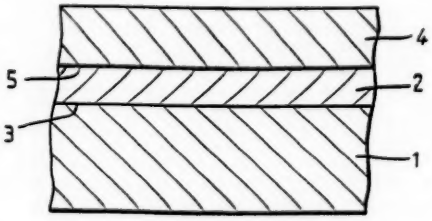
Continuation-in-part of application No. 08/560,761, Nov. 21, 1995, Pat. No. 5,667,889. This application Dec. 5, 1996, Appl. No. 759,507.

Claims priority, application United Kingdom, Nov. 21, 1995, 9523764

This patent is subject to a terminal disclaimer.

Int. Cl.[6] B32B *27/40;9/04;27/28*

U.S. Cl. 428—425.5 **8 Claims**



1. A polymeric film comprising a substrate having on at least one surface thereof, a primer layer formed from a composition comprising a polyurethane resin formed from the reaction product of an organic isocyanate and a polyol with the proviso the resin contains at least one ethylenically unsaturated group, and a silicone resin coating layer on the surface of the primer layer.

5,910,371
COMPOSITE GLASS ARTICLE AND METHOD OF MANUFACTURE

Josef Francel, 1802 Perth, Toledo, Ohio 43607, and Charles P. Duck, 28 Naugatuck Way, Waterville, Ohio 43566

Continuation of application No. 08/582,710, Jan. 4, 1996, abandoned. This application Feb. 13, 1997, Appl. No. 799,292.

Int. Cl.[6] B32B *17/06*

U.S. Cl. 428—428 **8 Claims**

1. A composite article comprising:

(a) a glass substrate having a coefficient of thermal expansion;

(b) a metallic, ceramic coating on a surface of the glass substrate, the metallic ceramic coating having a coefficient of thermal expansion lower than the coefficient of thermal expansion of the glass substrate; and

(c) a transition layer joining the metallic ceramic coating to the glass substrate, the transition layer comprising a mixture of the metallic, ceramic coating and the glass wherein the lower

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5,910,372
COATING

Mary Catherine Ambrose Griffin, Cambridge; Leslie George Howarth, Oxfordshire, and John Philip Tatum, Isleham, all of United Kingdom, assignors to Xaar Technology Limited, Cambridge, United Kingdom

Continuation of application No. PCT/GB95/02041, Aug. 30, 1995. This application Feb. 28, 1997, Appl. No. 808,244.

Claims priority, application United Kingdom, Aug. 30, 1994, 9417445

Int. Cl.[6] B32B *5/14*

U.S. Cl. 428—429 **50 Claims**

1. A coating on a substrate to endow said substrate with a desired surface property, said coating comprising a crosslinked copolysiloxane containing X'-groups and X-groups attached to different Si atoms wherein the X'-groups are monovalent organic groups which provide the desired surface property and the X-groups are monovalent organic groups which are reactive with a group on the substrate surface and have a higher surface tension than the X'-groups, the silicon atoms carrying the X-groups and the silicon atoms containing the X'-groups being in different siloxane layers of the coating, which layers are separated by at least one further siloxane layer; said coating being bonded to said substrate by reaction of X-groups with substrate surface groups reactive therewith.

5,910,373
METAL CONTAINING E-COAT CATALYSTS OPTIONALLY WITH TIN CATALYSTS

Emily C. Bossert, Wayne; Kevin Cannon, Hatboro; William D. Honnick, Exton, all of Pa., and Wayne Ranbom, Hopewell, N.J., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of application No. 08/471,098, Jun. 6, 1995, which is a continuation-in-part of application No. 08/097,854, Jul. 28, 1993, Pat. No. 5,718,817. This application Jun. 13, 1997, Appl. No. 874,320.

Int. Cl.[6] B05D *1/04*

U.S. Cl. 428—457 **12 Claims**

1. A process for coating a metal substrate comprising contacting said substrate with a curable conductive coating composition comprising:

(i) a blocked reactive component wherein said blocked reactive component is a blocked isocyanate or a blocked isothiocyanate;

(ii) a functional compound reactive with said blocked reactive component, said functional compound containing active hydrogen;

(iii) a catalyst for promoting the reaction of the reactive component with the functional compound, wherein said catalyst is based on the reaction product of manganese, cobalt, nickel, copper, zinc, germanium, antimony, or bismuth, or the compounds thereof with a mercaptan, or an organic acid, wherein said organic acid is hexanoic, oxalic, adipic, lactic, tartaric,

salicylic, thioglycolic, succinic, or mercapto succinic acid, or the reaction product of copper or germanium, or the compounds thereof with a lower aliphatic acid;

passing an electric current between the substrate and a counter-electrode in electrical contact with said coating and curing said coating.

5,910,374

MOISTURE BARRIER FILM

Gautam P. Shah, Simpsonville, S.C., assignor to Cryovac, Inc., Duncan, S.C.

Division of application No. 08/358,121, Dec. 16, 1994, Pat. No. 5,543,223, which is a division of application No. 08/116,798, Sep. 10, 1993, Pat. No. 5,482,771, which is a continuation-in-part of application No. 07/947,244, Sep. 18, 1992, abandoned. *This application Apr. 28, 1995, Appl. No. 431,225.*

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—474.4 **2 Claims**

1. A thermoplastic multi-layer film comprising:

(a) a core layer comprising an oxygen barrier material;

(b) two intermediate layers, on opposite surfaces of the core layer, comprising polyamide;

(c) two tie layers, each disposed on a respective polyamide layer, comprising a polymeric material selected from the group *consisting of:*

i) polymeric adhesive;

ii) ethylene/alpha olefin copolymer; and

iii) ethylene/vinyl acetate copolymer;

d) two moisture barrier layers, adhered to respective tie layers, comprising blend of propylene polymer or copolymer, and a hydrocarbon resin; and

e) two outermost layers comprising a polymeric material selected from the group consisting of:

i) propylene polymer,

ii) propylene copolymer,

iii) ethylene/alpha olefin copolymer, and

iv) polybutene.

5,910,375

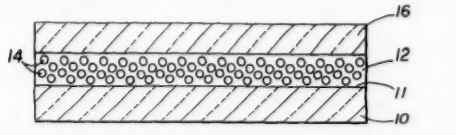
TINTABLE, SCRATCH RESISTANT COATINGS FOR PLASTIC OPHTHALMIC LENSES

Theodore L. Parker, Danville; Anthony Lam, and Nam Thanh Le, both of San Jose, all of Calif., assignors to 2C Optics, Inc., Alpharetta, Ga.

Filed May 3, 1996, Appl. No. 642,326

Int. Cl.[6] B32B *27/30;* **G02B** *5/22;* **G03B** *21/46*

U.S. Cl. 428—520 **55 Claims**



1. A dual layer coating for tinting a plastic material and rendering a surface of the plastic material scratch resistant, the dual coating comprising:

(A) a dye reservoir layer formed over a surface of the material to be tinted, the dye reservoir layer including between about fifteen and eighty percent by weight of component (i) which is an acrylated oligomer or acrylated oligomer/acrylate monomer blend resin, and between about one and seventy percent by weight of component (ii) which is a mono vinyl functional reactive diluent, wherein the weight percentages of components (i) and (ii) are based upon the sum of all components in the dye reservoir layer equaling 100%; and

(B) a coating layer formed over the dye reservoir layer, the coating layer including between about twenty and one hundred percent by weight of component (iii) which consists of *alkane polyols, the alkane polyols containing up to about forty* eight carbon atoms and at least three O-{acryloyl(polyalkylene oxide)} groups, each polyalkylene oxide chain including between about one and twenty alkylene oxide groups, and between about ten and seventy percent by weight of component (iv) which consists of polyacryloylated alkane polyols, the alkane polyols containing up to about twenty four carbon atoms and at least about two O-acryloyl groups, wherein the weight percentages of components (iii) *and (iv) are based upon the sum of all components in the* coating layer equaling 100%.

5,910,376

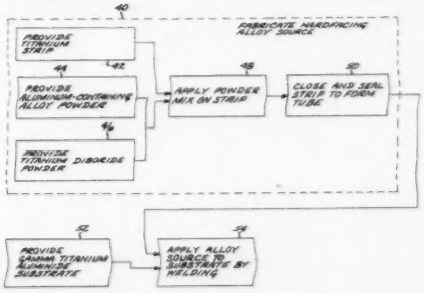
HARDFACING OF GAMMA TITANIUM ALUMINIDES

Thomas J. Kelly, Cincinnati, Ohio, assignor to General Electric *Company, Cincinnati, Ohio*

Filed Dec. 31, 1996, Appl. No. 775,649

Int. Cl.[6] B32B *1/06;15/16;* **B23K** *35/12;35/32*

U.S. Cl. 428—558 **12 Claims**



1. A hardfacing alloy source, comprising:

a *hollow tube of metallic titanium tube material;* and

a filler powder within the hollow tube, the filler powder comprising a filler mixture of;

an aluminum-containing alloy metallic powder comprising more than about 50 atomic percent aluminum; and

a nonmetallic powder;

the relative proportions of the titanium tube material, the aluminum-containing alloy metallic powder, and the nonmetallic powder being capable of forming a solid article having particles dispersed in a gamma titanium aluminide matrix.

5,910,377

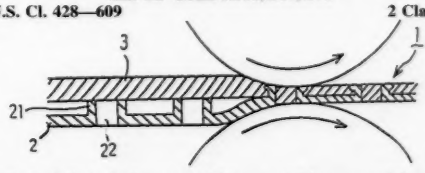
CLAD STEEL PLATE

Katsuro Tsukamoto, Osaka, and Susumu Ishikawa, Tokyo, both of Japan, assignors to Shinsozaihanbai Kabushiki Kaisha, Osaka, and Akiyama Gasket Kabushiki Kaisha, Tokyo, both of Japan

Filed Feb. 7, 1997, Appl. No. 796,267

Int. Cl.[6] B32B *15/18;5/00;3/06*

U.S. Cl. 428—609 **2 Claims**



1. A clad steel plate comprising a metal base material and a metal covering material attached to the base material manufactured by forming holes with rising rims in the base material, covering the base material with the covering material, rolling the base material with the covering material, and uniting the base material with the covering material to adhere each other throughout by passing the

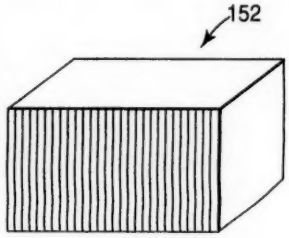
rims through the covering material and expanding the rims over the surface of the covering material.

5,910,378

MEMBRANE ELECTRODE ASSEMBLIES

Mark K. Debe, Stillwater; James M. Larson, Saint Paul; William V. Balsimo, Afton; Andrew J. Steinbach, Saint Paul, all of Minn., and Raymond J. Ziegler, Glenwood City, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 10, 1997, Appl. No. 948,627
Int. Cl.[6] H01M *4/86*
U.S. Cl. 429—42 **14 Claims**



1. An electrochemical MEA comprising:

an ion conductive membrane, said membrane having a first and second major surface;

catalyst adjacent to said first and second major surfaces; and

a porous, electrically conductive polymer film adjacent to said ion conductive membrane, said film comprising a polymer matrix and about 45 to about 98 percent by weight electrically conductive particles embedded within said polymer matrix; wherein the Gurly value of said polymer film is less than about 100 s/50 cc.

5,910,379

HYDROGEN ABSORBING ALLOY FOR A NEGATIVE ELECTRODE OF AN ALKALINE STORAGE BATTERY

Masaki Kasashima; Noriaki Hamaya; Naofumi Shinya, and Satoshi Shima, all of Fukui-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1998, Appl. No. 9,501
Claims priority, application Japan, Nov. 6, 1997, 9-304740
Int. Cl.[6] H01M *10/34*
U.S. Cl. 429—59 **16 Claims**

1. A hydrogen absorbing alloy for a negative electrode of an alkaline storage battery represented by a general formula $RNi_aCo_bAl_cM_d$ and containing 50 to 500 ppm of Mo, wherein R comprises 18 wt % or more Pr and 82 wt % or less of one or more metals other than Pr, Ni, Co, Al, M and Mo; M comprises one or more metals selected from the group consisting of Fe, Cr, Cu, and Mn,; each of a to d denotes a positive number expressing a molar ratio to R, and $3.0 \leqq a \leqq 4.5$; $0.3 \leqq b \leqq 1.0$; $0 < c \leqq 0.6$; $0 < d \leqq 0.5$.

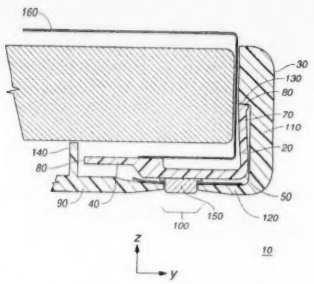
5,910,380

CONTACT RETENTION SYSTEM

Mark Taraboulos, Chamblee; William Phelps III, Lawrenceville, both of Ga., and Fauzi Yahaya, Gelugor, Malaysia, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1998, Appl. No. 49,733
Int. Cl.[6] H01M *002/10*
U.S. Cl. 429—100 **7 Claims**

1. A contact retention system for battery cells comprising:



a. a springy L-shaped retention member with two ends, which L-shaped retention member has a base, an upper portion, and a vertex formed from the intersection of the base and the upper portion;

b. a battery housing with a wall and a floor, which wall and floor intersect to form a corner, with a catchment on both the wall and the floor; and

c. one or more contacts between the base of the L-shaped retention member and the floor of the housing;

where the vertex of the L-shaped retention member is pushed toward the corner formed by the wall and the floor of the housing so that the ends of the L-shaped retention member are restrained by the catchments, so that any force exerted on the upper portion of the L-shaped retention member, pushing the upper portion of the L-shaped retention member towards the wall of the battery housing, causes the base of the L-shaped retention member to push the contacts toward the floor of the battery housing.

5,910,381

CHLORINATED DIETHYL CARBONATE SOLVENT FOR BATTERY

Jeremy Barker, 1770 No. Green Valley Pkwy #4021, Las Vegas; Feng Gao, 1050 Whitney Ranch Dr. #1913, Henderson, and Arnie Stux, 2362 Green Valley Pkwy #369, Las Vegas, all of Nev. 89014

Filed Apr. 17, 1997, Appl. No. 843,910
Int. Cl.[6] H01M *6/14*
U.S. Cl. 429—197 ***24 Claims***

12. An electrolyte solvent for an electrochemical cell, said solvent comprising a chlorinated diethyl carbonate of the formula $C_5O_3Cl_nH_{(10-n)}$, wherein n is from 1 to 10.

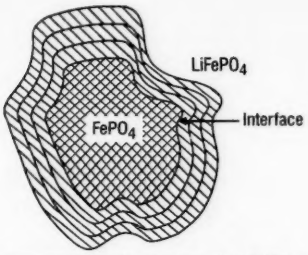
5,910,382

CATHODE MATERIALS FOR SECONDARY (RECHARGEABLE) LITHIUM BATTERIES

John B. Goodenough, Austin, Tex.; Akshaya K. Padhi, LaSalle, Ill.; K. S. Nanjundaswamy, Joplin, Mo., and Christian Masquelier, Boulogne Billancourt, France, assignors to Board of Regents, University of Texas Systems, Austin, Tex.

Provisional application No. 60/032,346, Dec. 4, 1996, Provisional application No. 60/016,060, Apr. 23, 1996. This application Apr. 21, 1997, Appl. No. 840,523.
Int. Cl.[6] H01M *4/58*
U.S. Cl. 429—218.1 **9 Claims**

1. A cathode material for a rechargeable electrochemical cell, said cell also comprising an anode and an electrolyte, the cathode



comprising a compound having the formula $LiMPO_4$, where M is at least one first-row transition-metal cation.

5,910,383

PRODUCTION PROCESS OF CARBONACEOUS MATERIAL AND BATTERY

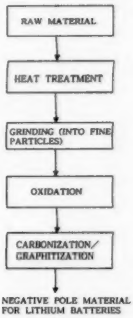
Yoshihiko Hase; Hidetoshi Morotomi; Hiromi Okamoto; Syoji Komura; Yasuyuki Takigawa; Shigeyuki Hirano, and Tetsuo Shiode, all of Tokyo, Japan, assignors to Adchemco Corporation, Tokyo, Japan

Filed Sep. 12, 1997, Appl. No. 928,262

Claims priority, application Japan, Sep. 13, 1996, 8-263746

Int. Cl.[6] H01M *4/58;4/60*

U.S. Cl. 429—231.4 **9 Claims**



1. A process for the production of a carbonaceous material comprising the following steps:

subjecting a vacuum distillation residual pitch to heat treatment at a temperature of up to 420° C. until the content of quinoline-insoluble components thereof becomes 50 to 80 wt. %, whereby said pitch is converted into a mesophase pitch;

grinding the thus-obtained mesophase pitch into fine particles having an aspect ratio not greater than 2;

subjecting the thus-ground product to oxidation treatment; and

subjecting the thus-oxidized product to carbonization or graphitization treatment.

5,910,384

μ -OXO-GALLIUIM PHTHALOCYANINE DIMER HAVING NOVEL POLYMORPH AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR PREPARED BY USING THE SAME

Yasuhiro Yamasaki; Kazuyoshi Kuroda, and Kenji Takaki, all of Neyagawa, Japan, assignors to Orient Chemical Industries, Ltd., Osaka-Fu, Japan

Filed Aug. 29, 1997, Appl. No. 919,783

Claims priority, application Japan, Sep. 13, 1996, 8-243381

Int. Cl.[6] G03G *5/06*

U.S. Cl. 430—58 **33 Claims**

1. An electrophotographic photoreceptor which includes an μ-oxo-gallium phthalocyanlne dimer as a charge generator, wherein said μ-oxo-gallium phthalocyanine dimer is selected from the group consisting of:

a μ-oxo-gallium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 6.8°, 12.9°, 19.0°, 19.6°, 20.3°, 25.5°, 25.9°, and 26.9° in an X-ray diffraction spectrum by CuK α-ray (A-form),

a μ-oxo-gallium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 7.1° in an X-ray diffraction spectrum by CuK α-ray, and shows no clear peak other than 7.1° (Amorphous-form),

a μ-oxo-gallium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 8.1°, 8.7°, 9.2°, 10.4°, 15.1°, 15.9°, 17.0°, 21.7°, 22.3°, 22.9°, 24.3°, 28.8°, 29.4°, and 30.5° in an X-ray diffraction spectrum by CuK α-ray (B-form),

a μ-oxo-gallium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 7.7°, 16.0°, 24.9°, and 26.3° in an X-ray diffraction spectrum by CuK α-ray (C-form),

a μ-oxo-gallium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 7.3°, 8.8°, 22.6°, 25.5°, and 27.8° in an X-ray diffraction spectrum by CuK α-ray (D-form),

a μ-oxo-gallium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 7.7°, 16.3°, 24.2°, and 27.6° in an X-ray diffraction spectrum by CuK α-ray (E-form),

a μ-oxo-gallium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 7.7°, 8.2°, 11.1°, 12.4°, 13.3°, 15.3°, 18.5°, 18.8°, 22.1°, 22.5°, 25.5°, 27.0°, 28.7°, 29.1°, and 29.4° in an X-ray diffraction spectrum by CuK α-ray (F-form),

a μ-oxo-gallium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 7.4°, 9.9°, 12.5°, 12.9°, 16.1°, 18.5°, 21.9°, 22.2°, 24.0°, 25.1°, 25.8°, and 28.2° in an X-ray diffraction spectrum by CuK α-ray (G-form),

a μ-oxo-gailium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 7.6°, 16.4°, 25.1°, and 26.6° in an X-ray diffraction spectrum by CuK α-ray (H-form), and

a μ-oxo-gailium phthalocyanine dimer having a novel polymorph which shows diffraction peaks at a Bragg angle (2 θ±0.2°) of 6.5°, 13.1°, 19.0°, 19.7°, 25.4°, and 26.3° in an x-ray diffraction spectrum by CuK α-ray (I-form).

5,910,385

ELECTRICALLY CONDUCTIVE COMPOSITION AND ELEMENTS CONTAINING SOLUBILIZED POLYANILINE COMPLEX

Sylvia Alice Gardner; Lori Jeanne Shaw-Klein, and Brian Kenneth Brady, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of application No. 08/583,266, Jan. 5, 1996, Pat. No. 5,716,550, Provisional application No. 60/002,104, Aug. 10, 1995. This application Aug. 25, 1997, Appl. No. 918,167.

Int. Cl.[6] G03C *1/89;* **G03G** *5/10;* **B32B** *9/04;9/02*

U.S. Cl. 430—62 **26 Claims**

15. An imaging element comprising a support having:

one or more imaging layers, and

on the same, opposite or both sides of said support, an electrically conductive layer formed from application of an electrically conductive coating composition, said electrically conductive layer being present on said support in each instance at a dry coverage of at least 150 mg/m^2,

said electrically conductive coating composition comprising a solution of:

a) a complex of a polymeric polyaniline and a protonic acid that has a counter-ion that imparts conductivity to said composition,

said complex being dissolved in a first solvent that has a Hansen polar solubility parameter of from 13 to about 17 $MPa^{1/2}$, and a Hansen hydrogen bonding solubility parameter of from about 5 to about 14 $MPa^{1/2}$, and

b) a film-forming binder dissolved in a second solvent, wherein said first and second solvents are the same or different,

provided that the total solids in said composition is less than or equal to about 10 weight % of the total composition, and the weight ratio of said binder to said complex is at least about 2:1.

5,910,386

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS AND PROCESS CARTRIDGE EMPLOYING THE SAME

Kazuo Yoshinaga, Kawasaki; Shunichiro Nishida, Yokohama; Masataka Kawahara; Keiko Hiraoka, both of Shizuoka-ken; Nobuo Kushibiki, Fujisawa; Hideki Kobayashi, Ichihara; Kikuko Takeuchi, Odawara, and Toru Masatomi, Ichihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1997, Appl. No. 890,649

Claims priority, application Japan, Jul. 9, 1996, 8-179001

Int. Cl.[6] G03G *5/14*

U.S. Cl. 430—66 **9 Claims**

1. An electrophotographic photosensitive member comprising a photosensitive layer and a protection layer formed on a support,

wherein the protection layer contains a particulate colloidal silica and a siloxane resin to have a contact angle of water of not less than 95°, said siloxane resin comprising a compound represented by formula (I):

$$RSiO_{3/2} \quad (I)$$

wherein R is $C_nF_{2n+1}C_2H_4$— and n is an integer from 4 to 18.

5,910,387

TONER COMPOSITIONS WITH ACRYLONITRILE AND PROCESSES

Walter Mychajlowskij; Beng S. Ong; Emily L. Moore, all of Mississauga, and Raj D. Patel, Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 13, 1998, Appl. No. 6,521

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—110 **22 Claims**

1. A toner composition comprised of colorant, and an addition polymer resin of styrene, butadiene, acrylonitrile and acrylic acid wherein said resin possesses a weight average molecular weight (Mw) of from about 15,000 to about 35,000 and a number average molecular weight (Mn) of from about 3,000 to about 12,000, relative to styrene standards.

5,910,388

METHOD OF ELECTROSTATICALLY PRINTING IMAGE-ENHANCING PARTICLES AND SAID PARTICLES

Bradley R. Ray, Woodbury, and William D. Sell, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Division of application No. 08/518,822, Aug. 24, 1995, Pat. No. 5,753,392. This application May 11, 1998, Appl. No. 75,886.

Int. Cl.[6] G03G *9/08*

U.S. Cl. 430—110 **12 Claims**

1. An electrostatically printable image-enhancing particle comprising:

(a) an image-enhancing particle, wherein said image-enhancing particles excludes image-enhancing particles in the form of a flake coated with a layer of black titanium oxide;

(b) an electrostatically chargeable material attached to at least a portion of an exterior surface(s) of the image-enhancing particle, wherein the electrostatically chargeable material is free of dyes and pigments and wherein the electrostatically chargeable material is selected from the group consisting of transparent materials, translucent materials, opaque materials, and combinations thereof, wherein the electrostatically chargeable material comprises: (i) an electrostatically chargeable polymeric material, and (ii) optionally, a charge controlling compound; wherein no more than 80% of the exterior surface of each image-enhancing particle may have an opaque electrostatically chargeable material attached thereto;

wherein the electrostatically printable image-enhancing particle is capable of providing sparkle, color flop, iridescence or luster.

5,910,389

METHOD FOR PRODUCING TONER FOR DEVELOPING IMAGES OF ELECTROSTATIC CHARGE, TONER FOR DEVELOPING IMAGES OF ELECTROSTATIC CHARGE, DEVELOPER FOR IMAGES OF ELECTROSTATIC CHARGE AND METHOD FOR FORMING IMAGES

Yasuo Matsumura; Manabu Serizawa; Masaaki Suwabe; Shuji Sato; Yasuo Kadokura; Hisao Morijiri; Takeshi Shoji, and Takahiro Mizoguchi, all of Minami-Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1997, Appl. No. 962,703

Claims priority, application Japan, Nov. 5, 1996, 8-292538

Int. Cl.[6] G03G *9/16*

U.S. Cl. 430—111 **18 Claims**

1. A method for producing toner for developing an image of electrostatic charge, comprising the steps of producing a dispersion liquid of flocculated particles by forming the flocculated particles in a dispersion liquid comprising at least dispersed resin particles, forming combined particles by dispersing a liquid dispersion comprising dispersed fine resin particles into the dispersion liquid of the flocculated particles so that the fine resin particles adhere to the flocculated particles and forming toner particles by fusing the combined particles by heating, wherein the molecular weight distribution curve of the resin in the toner particles as assessed by gel permeation chromatography has at least two peaks or shoulders and wherein the molecular weight of the resin in the fine resin particles is less than the molecular weight of the resin in the flocculated particles.

5,910,390

METHOD FOR FORMING PATTERN

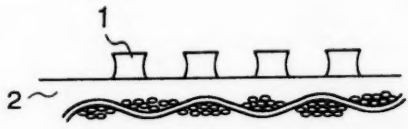
Hideyuki Hatanaka, Chiba, and Keita Miyasato, Fukushima, both of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Mar. 3, 1997, Appl. No. 813,945

Claims priority, application Japan, Mar. 5, 1996, 8-047252

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—139 **19 Claims**



1. A method for forming a pattern which comprises:

(a) providing a light-permeable substrate containing a photosensitive substance which absorbs an irradiation light and radiates a radiated light having a longer wavelength than the

wavelength of said irradiation light, said substrate having a light impermeable layer formed in an inverted pattern of a desired pattern;

(b) forming on said substrate a photopolymerizable resin layer which contains a radical generator and a sensitizer, said photopolymerizable resin layer not being activated by said irradiation light but being activated by said radiated light;

(c) irradiating said photosensitive substance with said irradiation light, which excites said photosensitive substance, generating said radiated light from said photosensitive substance to irradiate said photopolymerizable resin layer, activating the photopolymerizable resin layer and polymerizing said photopolymerizable resin layer in a portion corresponding to said desired pattern thereby producing a polymerized portion and an unpolymerized portion in said photopolymerizable resin layer; and thereafter,

(d) removing said unpolymerized portion in said photopolymerizable resin layer.

5,910,391

PROCESS FOR MAKING LITHOGRAPHIC PRINTING PLATE WITH WATER WASH CONTAINING MERCAPTO COMPOUND

Toshiro Kondo; Yutaka Araki; Hajime Fujioka, and Makiko Oko, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Aug. 6, 1997, Appl. No. 907,087

Claims priority, application Japan, Aug. 7, 1996, 8-208307; Sep. 5, 1996, 8-235305

***Int. Cl.*[6] G03F** *7/07;* **G03C** *8/32*

U.S. Cl. 430—204 **19 Claims**

1. A process for making a lithographic printing plate, which comprises subjecting a lithographic printing material having physical development nuclei between an aluminum support and a silver halide emulsion layer to exposure and then processing the lithographic printing material at least with a developing solution, a water washing solution and a finishing solution in this order,

wherein the processing with the water washing solution is carried out by using a water washing solution prepared by adding a nitrogen-containing heterocyclic compound having a mercapto group or a thione group to a fresh washing solution, and having a pH of 4 to 8.

5,910,392

RESIST COMPOSITION, A PROCESS FOR FORMING A RESIST PATTERN AND A PROCESS FOR MANUFACTURING A SEMICONDUCTOR DEVICE

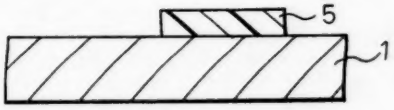
***Koji Nozaki; Ei Yano; Keiji Watanabe; Takahisa Namiki, and* Miwa Igarashi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan**

Filed Jun. 26, 1997, Appl. No. 882,734

Claims priority, application Japan, Oct. 30, 1996, 8-288524

Int. Cl.[6] **G03C** *1/492*

U.S. Cl. 430—270.1 **17 Claims**



1. A resist composition that can be developed with a basic aqueous solution comprising: the combination of a base resin comprised of a polymer that is itself insoluble in a basic aqueous solution and contains within its structure at least (A) a monomer unit I having a carboxylic acid or phenol protected with a protective group capable of being deprotected with an acid selected from the group consisting of an ester group, ether group, acetal group and ketal group, and (B) a monomer unit II having an ester group or ether group that contains a cyclic carbonate structure, and that can become soluble in a basic aqueous solution when the protective group of said monomer unit I is deprotected by the effect of the acid; and, a photo acid generator capable of generating an acid that can provoke deprotection of said protective group of monomer unit I when decomposed by absorption of imaging radiation.

13. A process for forming a resist pattern comprising the steps of:

coating a resist composition comprising: the combination of a base resin comprised of a polymer that is itself insoluble in a basic aqueous solution and contains within its structure at least (A) a monomer unit I having carboxylic acid or phenol protected with a protective group capable of being deprotected with an acid selected from the group consisting of an ester group, ether group, acetal group and ketal group, and (B) a monomer unit II having an ester group or ether group that contains a cyclic carbonate structure, and that can become soluble in a basic aqueous solution when the protective group of said monomer unit I is deprotected by the effect of the acid; and, a photo acid generator capable of generating an acid that can provoke deprotection of said protective group of monomer unit I when decomposed by absorption of imaging radiation; on a treated substrate,

selectively exposing the formed resist film to imaging radiation which is able to provoke decomposition of said photo acid generator of the resist composition, and

developing the exposed resist film with a basic aqueous solution.

15. A process for manufacturing a semiconductor device comprising the steps of:

forming a resist film by coating a resist composition comprising: the combination of a base resin comprised of a polymer that is itself insoluble in a basic aqueous solution and contains within its structure at least (A) a monomer unit I having carboxylic acid or phenol protected with a protective group capable of being deprotected with an acid selected from the group consisting of an ester group, ether group, acetal group and ketal group, and (B) a monomer unit II having an ester group or ether group that contains a cyclic carbonate structure, and that can become soluble in a basic aqueous solution when the protective group of said monomer unit I is deprotected by the effect of the acid; and, a photo acid generator capable of generating an acid that can provoke deprotection of said protective group of monomer unit I when decomposed by absorption of imaging radiation; on a substrate to be treated,

selectively exposing said resist film with imaging radiation which is able to provoke decomposition of said photo acid generator of the resist composition,

forming a resist pattern by developing the exposed resist film with a basic aqueous solution, and, using said resist pattern as a mask,

etching said underlying substrate.

5,910,393

OPTICAL RECORDING MATERIAL

Motomu Yoshimura, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 07/985,369, Dec. 3, 1992, abandoned, which is a continuation of application No. 07/771,521, Oct. 4, 1991, abandoned, which is a continuation of application No. 07/315,793, Oct. 2, 1989, abandoned, and application No. PCT/JP87/00373, Jun. 10, 1987, abandoned.

This application Aug. 12, 1994, Appl. No. 290,010.

Claims priority, application WIPO, Jun. 10, 1987, PCT/JP87/00373

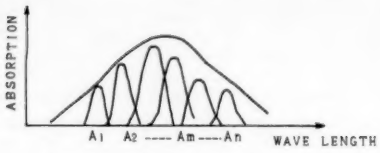
This patent is subject to a terminal disclaimer.

Int. Cl.[6] **G11B** *7/24*

U.S. Cl. 430—270.11 **5 Claims**

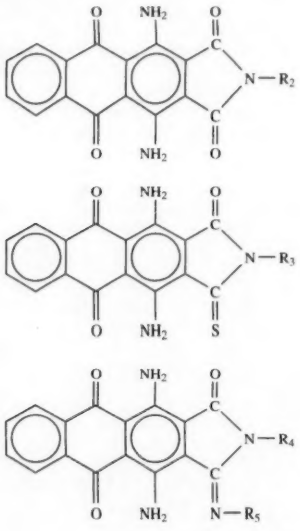
1. An optical recording system, comprising:

a semiconductor laser capable of emitting electromagnetic radiation having a wavelength of 670 nm or longer;



a signal detector for detecting the electromagnetic radiation emitted by the semiconductor laser, the signal detector being located in the path of the electromagnetic radiation emitted by the laser a distance from the laser; and

a recording medium in a form of a layer of a dyestuff capable of absorbing the electromagnetic radiation and subsequently exhibiting a loss of an absorption band at the wavelength of the electromagnetic radiation emitted by the laser, the dyestuff being capable of undergoing a photochemical hole burning reaction and being formed from a molecule selected from the group consisting of:



wherein R_2, R_3, R_4, and R_5 are each independently selected from the group consisting of alkyl groups and alkoxy groups, the recording medium being supported in the path of the electromagnetic radiation emitted by the laser between the laser and the signal detector so that the electromagnetic radiation emitted by the laser impinges upon the dyestuff prior to impinging upon the signal detector and the loss of the absorption band of the dyestuff is detected by the signal detector, and wherein the dyestuff has an absorption wavelength of 670 nm or longer.

5,910,394

I-LINE PHOTORESIST COMPOSITIONS

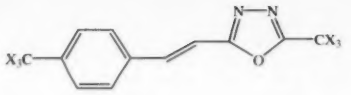
James G. Shelnut, Northboro, Mass., assignor to Shipley Company, L.L.C., Marlborough, Mass.

Filed Jun. 18, 1997, Appl. No. 878,398

Int. Cl.[6] G03F *7/038*

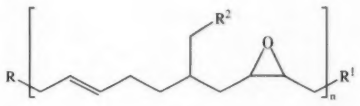
U.S. Cl. 430—280.1 **10 Claims**

1. An i-line negative photoimageable composition which is photoimageable at a wavelength of about 320 to about 420 nanometers, said composition comprising in combination a photoacid generator which is a an oxidiazole of the formula



where X is selected from the group consisting of chlorine and bromine, a reactive oligomer that contains one or more crosslinking groups and a resin binder.

6. The composition of claim **1** where the oligomer is a compound of the following formula:



where R and R^1 are each independently selected from the group consisting of hydrogen, substituted and unsubstituted alkyl, substituted and unsubstituted aryl, epoxy, hydroxy and alkylene; R^2 is selected from the group consisting of alkylene and alkyl; and n is an integer equal to 2 or greater.

5,910,395

NEGATIVE-ACTING NO-PROCESS PRINTING PLATES

Minyu Li, Oakdale; James P. Gardner, Stillwater; John E. Kluge, Woodbury, and Sumita B. Mitra, West St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of application No. 08/582,459, Jan. 3, 1996, abandoned, which is a continuation-in-part of application No. 08/429,899, Apr. 27, 1995, abandoned. This application Mar. 4, 1997, Appl. No. 811,560.

Int. Cl.[6] G03F *7/30*

U.S. Cl. 430—302 **46 Claims**

1. A process of forming an imaged article comprising the steps of: (a) exposing a negative-acting printing plate to radiation within a range absorbed by a photoinitiator present in said printing plate to form a latent image-bearing article; (b) thereafter on press, without intervening development of the latent image-bearing article applying a fountain solution to said latent image-bearing article; and (c) applying ink to said latent image-bearing article, thereby forming an imaged article wherein the negative-acting printing plate comprises a substrate coated with a photosensitive composition comprising: (a') a reactive, acid functional polymer of the formula B(X)(Y), wherein B represents an organic backbone, each X independently is a salt of an acidic group and each Y independently is a photocurable group; and (b') a photoinitiator which initiates crosslinking of said polymer upon exposure to radiation, wherein X and Y are present in an amount sufficient to enable said article to be placed directly on press after exposure with no additional processing steps being required.

3. The process of claim **1** wherein said article is a lithographic printing plate.

5,910,396

METHOD OF PATTERNED ERODING OF A COATING PROVIDED ON A SUBSTRATE

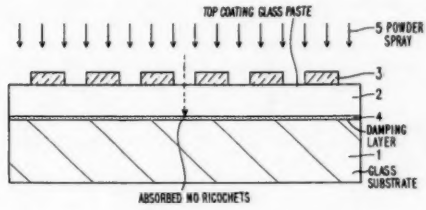
Jacobus M. Dings; Remko Horne, and Gerardus N. A. Van Veen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of application No. 08/523,834, Sep. 6, 1995, Pat. No. 5,789,853. This application Feb. 2, 1998, Appl. No. 17,036.

Claims priority, application European Pat. Off., Sep. 6, 1994, 94202544

Int. Cl.[6] H01J *9/00;* **B24B** *1/00;* **G03F** *7/00*

U.S. Cl. 430—323 **16 Claims**



1. A method of patterning a top coating on a substrate, comprising the steps of:

providing a damping layer on a relatively hard substrate,

providing a top coating on the damping layer,

providing a mask on the top coating to form a masked top coating, and

exposing the masked top coating to a stream of kinetic particles.

5,910,397

METHOD OF PROCESSING A PHOTOGRAPHIC PRODUCT

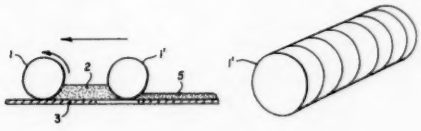
Christiane B. Feumi-Jantou, Chalon Sur Saone, France; Zoe Orr, Watford, and Jeffrey K. Green, Harrow, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 17, 1998, Appl. No. 62,087

Claims priority, application France, Apr. 18, 1997, 97 05096

Int. Cl.[6] G03C *5/39*

U.S. Cl. 430—428 **8 Claims**



1. A method of processing a photographic product comprising the steps of:

a) developing the photographic product,

b) fixing the photographic product with a solution containing thiosulfate, and

c) washing the photographic product, wherein the washing step consists of applying, to the photographic product, a layer of a homogeneous aqueous washing solution comprising an oxidizing agent capable of oxidizing the thiosulfate ions into sulphate ions and a photographically inert wetting agent.

5,910,398

PHOTOGRAPHIC GLASS PLATES HAVING ANTIHALATION UNDERLAYER

Ronald James Schmidt, and Lawrence Anneilo Savino, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 13, 1996, Appl. No. 662,575

Int. Cl.[6] G03C *1/76*

U.S. Cl. 430—510 **5 Claims**

1. A method of preparing a photographic element comprising coating on a glass support, the following formulations, in order, to form coated layers on said glass support:

a subbing layer formulation in an amount sufficient to provide a coated subbing layer having a dry thickness of from about 0.02 to about 2 μm,

an antihalation layer formulation to provide a coated antihalation layer having a thickness of from 1 to about 5 μm,

a silver halide emulsion to provide a coated silver halide emulsion layer,

and a protective overcoat layer formulation comprising a matting agent at a level of from about 0.005 to about 0.1 g/m^2, and a lubricant, to provide a protective overcoat layer having a thickness of from 1 to about 4 μm,

said element lacking backside layers on said glass support, and said method being carried out without lamination, and said formulations being coated on said glass support using a multilayer coating machine.

5,910,399

BACKING LAYER FOR MOTION PICTURE FILM

Brian A. Schell, Honeoye Falls, and Charles C. Anderson, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 4, 1998, Appl. No. 90,831

Int. Cl.[6] G03C *1/85;1/825;1/76*

U.S. Cl. 430—517 **12 Claims**

1. A motion picture film comprising a support having, in order, on one side thereof an antihalation undercoat and at least one silver halide emulsion layer and having, in order, on an opposite side thereof an antistatic layer, a protective overcoat; characterized in that said protective overcoat is comprised of a polyurethane binder and said polyurethane binder has a tensile elongation to break of at least 50% and a Young's modulus measured at a 2% elongation of at least 50000 lb/in^2, and a topcoat farthest from said support formed by the coating and subsequent drying of a coating composition comprising gelatin-grafted polyurethane comprising gelatin covalently bound to a polyurethane through a grafting agent, wherein a ratio of gelatin to polyurethane is from 1:10 to 2:1.

5,910,400

ANTISTATIC COMPOSITION AND PHOTOGRAPHIC ELEMENT CONTAINING A LAYER OF THIS COMPOSITION

Olivier J. Poncelet, and Jeannine Rigola, both of Chalon-Sur-Saone, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1998, Appl. No. 31,155

Claims priority, application France, Mar. 12, 1997, 97 03231

Int. Cl.[6] G03C *1/89*

U.S. Cl. 430—529 **10 Claims**

1. An homogeneous aqueous antistatic film-forming composition comprising:

1) a fibrous polymeric silico-aluminate with the formula $Al_xSi_yO_z$ wherein x:y is in the range of from 1 to 3 and z is in the range of from 2 to 6, and

2) a latex having surface functions capable of conferring a pH below 7 to an aqueous solution of this latex, said latex being substantially free of groups capable of chelating the aluminium combined in the polymeric silico aluminate.

10. A Photographic element comprising a support, at least one layer of light-sensitive silver halide emulsion, and at least one layer of the composition of claim **1**.

5,910,401

GELATIN-MODIFIED POLYURETHANE AND POLYESTER FILM BASE

Charles C. Anderson, Penfield; Brian A. Schell, Honeoye Falls, and Mario D. DeLaura, Hamlin, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 4, 1998, Appl. No. 90,576

Int. Cl.[6] **G03C** *1/93;* **B32B** *27/00;24/40*

U.S. Cl. 430—533 **10 Claims**

6. A photographic element comprising:

a polyester film support;

an adhesion promoting layer directly adhered to a surface of said support formed by the coating and subsequent drying of a coating composition comprising gelatin-grafted polyurethane comprising gelatin covalently bound to a polyurethane through a grafting agent, wherein a ratio of gelatin to polyurethane is from 1:10 to 2:1.

at least one silver halide emulsion layer superposed on said support.

5,910,402

PHOTOSENSITIVE IMAGE-FORMING ELEMENT WITH INCREASED SENSITIVITY-FOG-RELATIONSHIP

René De Keyzer, Waasmunster; Johan Loccufier, Zwijnaarde, and Kathy Elst, Kessel, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

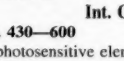
Filed May 26, 1998, Appl. No. 84,218

Claims priority, application European Pat. Off., Jun. 13, 1997, 97201756

Int. Cl.[6] **G03C** *1/09;1/34*

U.S. Cl. 430—600 **10 Claims**

1. A photosensitive element which comprises a support, at least one silver halide emulsion layer and a non-light sensitive hydrophilic colloidal layer, wherein the emulsion layer comprises a selenium compound represented by the formula (1):



(1)

wherein:

Q represents R^1SO_2 or $R^2R^3P{=}X$;

each of R^1, R^2 and R^3 the same or different represents OR^4, NR^5R^6, SR^7, SeR^8 or an alkyl group, an aryl group or a heteroaryl group;

X represents O, S or Se;

each of R^4, R^5, R^6, R^7 and R^8 the same or different represents hydrogen, an alkyl group, an aryl group or a heteroaryl group, or R^5 and R^6 together represents the atoms necessary to form a N-containing ring.

5,910,403

METHODS FOR MEASURING CELLULAR PROLIFERATION AND DESTRUCTION RATES IN VITRO AND IN VIVO

Marc K. Hellerstein, Kensington, Calif., assignor to The Regents of University of California, Oakland, Calif.

Filed May 15, 1997, Appl. No. 857,007

Int. Cl.[6] **C12Q** *1/00*

U.S. Cl. 435—4 **16 Claims**

1. A method for measuring cellular proliferation, comprising contacting a cell with a detectable amount of a stable isotope label which is incorporated into DNA via de novo nucleotide synthesis pathway, detecting the label in the DNA, and determining an amount of label incorporated in the DNA to measure cellular proliferation.

5,910,404

SYNTHETIC ANTIGENS FOR THE DETECTION OF ANTIBODIES TO HEPATITIS C VIRUS

Robert J. Deleys, Grimbergen; Dirk Pollet, Wijnegem; Geert Maertens, Bruges, and Hugo Van Heuverswijn, Laarne, all of Belgium, assignors to Innogenetics N.V., Ghent, Belgium

Division of application No. 08/391,671, Feb. 21, 1995, which is a continuation of application No. 07/920,286, filed as application No. PCT/EP91/02409, Dec. 13, 1991, abandoned. This application Jun. 6, 1995, Appl. No. 466,975.

Claims priority, application European Pat. Off., Dec. 14, 1990, 90124241

Int. Cl.[6] **G01N** *33/576;* **C12Q** *1/70*

U.S. Cl. 435—5 **40 Claims**

1. An isolated peptide having the amino acid sequence shown in SEQ ID NO: 9.

5,910,405

HCV DIAGNOSTIC AGENTS

Joong Myung Cho; Deog Young Choi; Chun Hyung Kim; Hong Seob So; Jae Young Yang; In Soo Kim, and Joo Ho Kim, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

PCT No. PCT/KR94/00040, § 371 Date Oct. 24, 1995, § 102(e) Date Oct. 24, 1995, PCT Pub. No. WO94/25486, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 29, 1994, Appl. No. 537,811

Claims priority, application Rep. of Korea, Apr. 30, 1993, 1993/7440

Int. Cl.[6] **C12Q** *1/70;* **G01N** *33/53;* **C07K** *14/18*

U.S. Cl. 435—5 **7 Claims**

1. A diagnostic reagent for detecting an antibody that binds a hepatitis C viral antigen in a sample, which reagent comprises a recombinant protein containing the amino acid sequence of one or more proteins selected from the group consisting of: KHCV COREEPI having the sequence of SEQ ID NO: 42, KHCV 518 having the sequence of SEQ ID NO: 43, KHCV NS4E having the sequence of SEQ ID NO: 44, KHCV E1G having the sequence of SEQ ID NO: 45, KHCV E2A having the sequence of SEQ ID NO: 46, KHCV E2E having the sequence of SEQ ID NO: 47, and KHCV NS5-1.2 having the sequence of SEQ ID NO: 48.

5,910,406

MANIPULATING NUCLEIC ACID SEQUENCES

Stephen Minter, New Mills, United Kingdom, assignor to Tepnel Medical Limited, United Kingdom

PCT No. PCT/GB92/02394, § 371 Date Aug. 5, 1994, § 102(e) Date Aug. 5, 1994, PCT Pub. No. WO93/13220, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 23, 1992, Appl. No. 256,132

Claims priority, application United Kingdom, Dec. 24, 1991, 9127415

Int. Cl.[6] **C12Q** *1/68;* **C07H** *21/02;* **C08G** *63/48;* **B32B** *5/16*

U.S. Cl. 435—6 **40 Claims**

1. Apparatus for effecting a manipulation on a nucleic acid sequence comprising

a flow through vessel containing a solid support system to which is bonded single stranded oligonucleotide complementary to a specific sequence on a target nucleic acid,

storage means for storing solutions removed from the vessel during washing or other procedures, before the solutions are returned to the column,

detector means for detecting products of nucleic acid manipulations, and

control means for diverting solutions into and out of the vessel, into waste or storage areas and to the detector means, wherein the solid support system comprises a particulate solid support system having a cross-linked siloxane matrix in which silicon atoms are bonded to the support and are cross-linked together by —O— linkages and to which is bonded the single stranded oligonucleotide.

5,910,407

METHOD FOR DETECTION OF TARGET NUCLEIC ACID BY ANALYSIS OF STOOL

Bert Vogelstein, and Kenneth W. Kinzler, both of Baltimore, Md., assignors to The Johns Hopkins University School of Medicine, Baltimore, Md.

Continuation of application No. 07/861,910, Apr. 1, 1992, abandoned. This application Aug. 26, 1994, Appl. No. 297,265.

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 **22 Claims**

1. A method for detecting a gastrointestinal neoplasm in a mammalian subject, wherein the neoplasm is associated with a mutation in a K-ras oncogene comprising:

separating target nucleic acid present in a stool specimen from the subject, from non-mammalian nucleic acid with which it is associated, by incubating the stool specimen with a buffer solution comprising at least 500 mM buffer; a chelating agent, a salt at a concentration of less than about 10 mM; wherein the buffer solution has a pH of about 8.0 to 9.0;

amplifying the target nucleic acid containing K-ras oncogene nucleotide sequences; and

detecting the presence of the amplified K-ras nucleic acid, wherein detection of a mutation in the amplified K-ras nucleic acid is indicative of a gastrointestinal neoplasm.

5,910,408

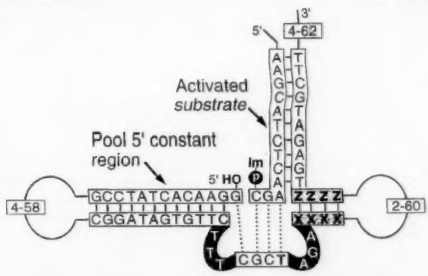
CATALYTIC DNA HAVING LIGASE ACTIVITY

Jack W. Szostak, Boston, Mass.; Bernard Cuenoud, Basel, Switzerland, and David E. Huizenga, Winthrop, Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Jun. 7, 1995, Appl. No. 487,867

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **17 Claims**



7. A catalytic DNA molecule capable of ligating a first substrate nucleic acid to a second substrate nucleic acid, said first substrate nucleic acid comprising the sequence 3'-S^1-S^2-5', said second substrate nucleic acid comprising the sequence 3'S^3-S^4-5', and said catalytic DNA molecule comprising the sequence 5'-E^1-TTT-E^2-AGA-E^3-E^4-E^5-E^6-3', wherein

S^1 comprises at least two nucleotides positioned adjacent to the 3' end of S^2, said S^1 nucleotides being complementary to an equivalent number of nucleotides in E^1 that are positioned adjacent to the 5' end of said TTT;

S^2 comprises one–three nucleotides, S^3 comprises one–six nucleotides, and the 5' terminal nucleotide of S^2 and the 3' terminal nucleotide of S^3 alternatively contain an activated group or a hydroxyl group;

S^4 comprises at least two nucleotides positioned adjacent to the 5' end of S^3, said S^4 nucleotides being complementary to an equivalent number of nucleotides in E^6 that are positioned adjacent to the 3' end of E^5;

E^1 comprises at least two nucleotides positioned adjacent to the 5' end of said TTT, said E^1 nucleotides being complementary to an equivalent number of nucleotides in S^1 that are positioned adjacent to the 3' end of S^2;

E^2 comprises zero–twelve nucleotides;

E^3 comprises at least two nucleotides positioned adjacent to the 3' end of said AGA, said E^3 nucleotides being complementary to an equivalent number of nucleotides in E^5 that are positioned adjacent to the 5' end of E^6;

E^4 comprises 3–200 nucleotides;

E^5 comprises at least two nucleotides positioned adjacent to the 5' end of E^6, said E^5 nucleotides being complementary to an equivalent number of nucleotides in E^3 that are positioned adjacent to the 3' end of said AGA; and

E^6 comprises at least two nucleotides positioned adjacent to the 3' end of E^5, said E^6 nucleotides being complementary to an equivalent number of nucleotides in S^4 that are positioned adjacent to the 5' end of S^3.

5,910,409

METHODS AND REAGENTS FOR DETECTING FUNGAL PATHOGENS IN A BIOLOGICAL SAMPLE

Jnanendra K. Bhattacharjee, and Vasker Bhattacherjee, both of Oxford, Ohio, assignors to Miami University, Oxford, Ohio

Filed May 20, 1996, Appl. No. 650,809

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **24 Claims**

1. A nucleic acid having the nucleotide sequence (SEQ ID NO:1)

AACAAGCTTAACAAAGAGAGATTGTTT.

5,910,410

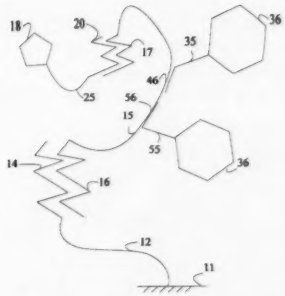
DUAL TAG BINDING ASSAY

Kay Lichtenwalter, San Jose, and Calvin B. Ward, Castro Valley, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 6, 1996, Appl. No. 709,368

Int. Cl.[6] **C12Q** *1/68*

U.S. Cl. 435—6 **3 Claims**



1. A method for detecting the presence of target nucleic acid molecules having first, second and third target sequences, said method comprising the steps of:

bringing a solution to be tested in contact with a solid support having a probe nucleic acid sequence attached thereto, said probe nucleic acid sequence comprising a sequence that is complementary to said first target sequence; and

bringing a solution including a dye solution in contact with said solid support, said dye solution comprising a first dye attachment nucleic acid sequence coupled to a first dye and a second dye attachment nucleic acid sequence coupled to a second dye, said first dye attachment nucleic acid sequence being complementary to said second target sequence and said second dye attachment nucleic acid sequence being complementary to said third target sequence, said first dye having a different emission spectrum than that of said second dye, said solution including said dye solution providing conditions enabling said first and second dye attachment nucleic acid sequences to hybridize to said second and third target sequences, respectively, thereby binding said first and second dye attachment nucleic acid sequences to said solid support via said probe nucleic acid sequence; and measuring the quantities of said first and second dyes bound to said solid support.

5,910,411

METHOD FOR IDENTIFYING AGENTS THAT MODULATE TRANSCRIPTION OF HUMAN CYTOMEGALOVIRUS POLYMERASE

Miguel S. Barbosa, and Jun Wu, both of San Diego, Calif., assignors to Signal Pharmaceuticals, Inc., San Diego, Calif.

Filed Sep. 30, 1996, Appl. No. 720,543

Int. Cl.[6] **C12Q** *1/02;1/68;* **C12N** *5/10*

U.S. Cl. 435—6 **8 Claims**

1. A method for identifying an agent that modulates transcription of HCMV DNA polymerase, comprising:

(a) transfecting a cell permissive for HCMV replication, wherein the cell expresses IE86 and a reporter gene, and wherein the reporter gene is under the control of an HCMV DNA polymerase promoter, with a polynucleotide encoding a candidate agent for modulating transcription of HCMV DNA polymerase; and

(b) evaluating the effect of said candidate agent on reporter gene transcription, wherein modulation of reporter gene transcription by said candidate agent is indicative of the ability to modulate HCMV DNA polymerase transcription, and therefrom identifying an agent that modulates transcription of HCMV DNA polymerase.

5,910,412

METHOD FOR IDENTIFYING THE SEX OF SPINACH BY DNA MARKERS

Toyokazu Akamatsu, Kimitsu, and Takao Suzuki, Sodegaura, both of Japan, assignors to Sakata Seed Corporation, Yokohama, Japan

Filed May 13, 1997, Appl. No. 855,449

Claims priority, application Japan, May 14, 1996, 8-119124

Int. Cl.[6] **C12Q** *1/68;1/04;* **C07H** *21/04*

U.S. Cl. 435—6 **24 Claims**

1. A method for identifying the sex of a spinach plant comprising:

(a) determining whether a sample obtained from a spinach plant contains a DNA sequence that identifies the plant as a male plant, and

(b) identifying the sex of the plant if the plant contains the DNA sequence, or identifying the sex of the plant if the plant does not contain the DNA sequence.

5,910,413

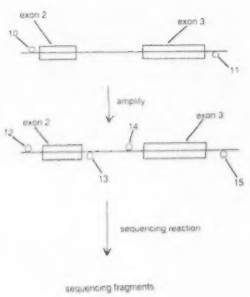
METHOD AND KIT FOR AMPLIFICATION, SEQUENCING AND TYPING OF CLASSICAL HLA CLASS I GENES

Caroline Elizabeth Garey, Toronto, and James Leushner, North York, both of Canada, assignors to Visible Genetics, Inc., Toronto, Canada

Filed Oct. 10, 1997, Appl. No. 948,717

Int. Cl.[6] **C12Q** *1/68;* **C07H** *21/04*

U.S. Cl. 435—6 **9 Claims**



1. A method for determining the allelic type of a classical HLA Class I gene present in a sample comprising the steps of

combining the sample with an amplification reaction mixture comprising a set of amplification primers selected from the group consisting of the following primer sets:

Seq ID Nos 1 and 2;

Seq. ID Nos 3, 4 and 5; and

Seq ID Nos. 6 and 7,

and cycling the resulting mixture to produce an amplification product;

combining the amplification product with a sequencing reaction mixture comprising one or more oligonucleotide sequencing primers which hybridize to conserved regions of the amplification product under suitable conditions to produce sequencing fragments;

evaluating the sequencing fragments to determine the sequence of at least a portion of exon 2 or exon 3 of the gene in the sample; and

comparing the determined sequence with a standard sequence for known alleles to determine the allelic type of the gene in the sample.

5,910,414

TOPOISOMERASE I OF STREPTOCOCCUS PNEUMONIAE

Michael N. Gwynn, Chester Springs, and Howard Kallender, King of Prussia, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Provisional application No. 60/028,370, Oct. 15, 1996. This application Oct. 14, 1997, Appl. No. 949,637.

Int. Cl.[6] **C12Q** *1/68;* **C07H** *21/00;* **C12N** *5/10;15/31*

U.S. Cl. 435—6 **11 Claims**

1. In a process for diagnosing a disease caused by the infection of a topoisomerase I polypeptide producing *Streptococcus pneumoniae* in which said process is characterized by the detection of a polynucleotide encoding said topoisomerase I polypeptide in a sample of a nucleic acid, the method comprising:

(a) combining the sample of a nucleic acid from infected tissue or fluid and a nucleic acid probe comprising a sequence of at least 30 contiguous nucleotides of SEQ ID NO:1; and

(b) detecting, if present, a complex between the probe and a nucleic acid from the sample.

5,910,415
CONTROLLED MODIFICATION OF EUKARYOTIC GENOMES

Thomas K. Hodges, West Lafayette, Ind., and Leszek A. Lyznik, Johnston, Iowa, assignors to Purdue Research Foundation, West Lafayette, Ind.

Division of application No. 08/612,551, Mar. 8, 1996, Pat. No. 5,744,336, which is a division of application No. 08/010,997, Jan. 29, 1993, Pat. No. 5,527,695. This application Jan. 13, 1998, Appl. No. 6,232.

Int. Cl.[6] **C12Q** *1/68;* **C12N** *15/82;* **C07H** *21/04;* **A01H** *4/00*

U.S. Cl. 435—6 **12 Claims**

1. A method for the production of fertile, transgenic plants wherein the transgenic plant has a DNA sequence of interest integrated at a predetermined DNA sequence of the plant, said method comprising the steps of

introducing into plant cells a DNA construct comprising

a multi-functional DNA sequence flanked by a pair of directly repeated first site-specific recombination sequences,

said multi-functional DNA sequence comprising a gene encoding a first site-specific recombinase that interacts with the first site-specific recombination sequence, and a DNA sequence targeted for insertion via homologous recombination into the DNA of the plant cell,

said targeted DNA sequence being flanked by nucleotide sequences sharing homology to nucleotide sequences present in the eukaryotic cell, and comprising said DNA *sequence of interest and an excisable selection region,*

said excisable selection region being flanked by a pair of directly repeated second site-specific recombination sequences and comprising a gene encoding a selectable marker;

selecting for plant cells having said DNA construct integrated into the DNA of the plant cell;

eliminating randomly inserted DNA constructs through expression of said first site-specific recombinase;

identifying cells having said DNA sequence of interest integrated into the plant's DNA via a homologous recombination event; and

culturing the identified cells to generate the transgenic plant.

5,910,416
ADRENOMEDULLIN

Kazuo Kitamura, Miyazaki; Kenji Kangawa, 3-50-D12-104, Aoyama-dai, Suita-shi Osaka 565; Hisayuki Matsuo, Kobe, and Tanenao Eto, Miyazaki, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, and Kenji Kangawa, Suita, both of Japan

Continuation of application No. 08/484,738, Jun. 7, 1995, abandoned, which is a division of application No. 08/233,389, Apr. 26, 1994, Pat. No. 5,639,855. This application Jan. 7, 1998, Appl. No. 4,713.

Claims priority, application Japan, Apr. 26, 1993, 5-099856; *Jul. 23, 1993, 5-183107; Nov. 29, 1993, 5-298736;* Apr. 18, 1994, 6-079035

Int. Cl.[6] **G01N** *33/53*

U.S. Cl. 435—7.1 **5 Claims**

1. An immunological assay for a peptide comprising the steps of:

incubating a sample with an antibody against the peptide under conditions for forming an antigen-antibody complex, wherein the peptide has an amino acid sequence selected from the group consisting of an amino acid sequence from Ser in the 13 position to Tyr in the 52 position of SEO ID No. 1, an amino acid sequence from Tyr in the 1, position to Tyr in the 52 position of SEO ID No. 1 an amino acid sequence from Ala in the −73 position to Tyr in the 52 position of SEQ ID No. 1, an amino acid sequence from Met in the −94 position to Leu in the 91 position of SEQ ID No. 1, an amino acid sequence from Arg in the −64 position to Arg in the −54 position of SEQ ID No. 1, and an amino acid sequence from Ala in the −73 position to Arg in the −54 position of SEQ ID No. 1, and wherein the carboxy terminal of the peptide is —COX (wherein X is selected from the group consisting of —OH, —NH_2 and —Gly—OH);

measuring the amount of the antigen-antibody complex; and

determining the concentration of the antigen-antibody complex by applying the result of measurement to a standard curve.

5,910,417
REGULATION OF CYTOKINE PRODUCTION IN A HEMATOPOIETIC CELL

Erwin W. Gelfand, Englewood, and Gary L. Johnson, Boulder, both of Colo., assignors to National Jewish Center for Immunology and Respiratory Medicine, Denver, Colo.

Filed May 31, 1996, Appl. No. 656,563

Int. Cl.[6] **G01N** *33/53;* **A01N** *37/18*

U.S. Cl. 435—7.2 **2 Claims**

1. A method to treat allergic inflammation in a human, comprising administering to said human an effective amount of a compound which directly interacts with a signal transduction molecule in an MEKK/JNKK-contingent signal transduction pathway selected from the group consisting of MEKK1, MEKK2, MEKK3, MEKK4, JNKK, JNK1, and JNK2, said interaction resulting in the inhibition of cytokine production such that allergic inflammation is thereby treated.

5,910,418
ANTIBODIES AND ASSAY FOR DETECTING MUTANT APC PROTEINS

David E. Hill, Arlington; Karen A. Johnson, Watertown, both of Mass.; Kenneth W. Kinzler, and Bert Vogelstein, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation of application No. 08/034,850, Mar. 19, 1993, abandoned. This application Jan. 9, 1995, Appl. No. 370,235.

Int. Cl.[6] **G01N** *33/574;33/53;33/572;33/537*

U.S. Cl. 435—7.23 **19 Claims**

7. A method for determining the presence of an APC mutation which results in a truncated APC gene product in a human, comprising the steps of:

contacting a first sample of a tissue or body fluid with a first antibody which is specifically immunoreactive with an epitope contained within amino acids 16–29 or 109–170 of APC protein as shown in SEQ ID NO:2;

determining the amount of binding of the first antibody to said first sample;

contacting a second sample of the tissue or body fluid with a second antibody which is specifically immunoreactive with an epitope contained within the carboxy terminal 306 amino acids of APC as shown in SEQ ID NO:2;

determining the amount of binding of the second antibody to *said second sample;*

comparing the determined amount of binding of said first antibody to the determined amount of binding of said second antibody, wherein finding a sample which binds substantially more of the first antibody than the second antibody indicates an APC mutation which results in a truncated APC gene product in the human.

18. A method for detecting truncated forms of APC by detecting a difference in subcellular localization, comprising the steps of:

lysing a test sample of cells from a human;

fractionating said lysed cells into a cytosolic and a membrane fraction;

contacting said cytosolic fraction with an antibody which is specifically immunoreactive with an epitope contained within the amino terminal *1103* amino acids of *APC* as shown in SEQ ID NO:2;

detecting any of said antibody which bound to said cytosolic fraction, the presence of antibody bound to the cytosolic fraction indicating a truncated form of APC in said cells.

5,910,419

METHOD FOR FORENSICALLY SCREENING HAIR SAMPLES FOR THE PRESENCE OF CANNABINOIDS

Ted Donald Johnson, 5239 Martingale Ave., Las Vegas, Nev. 89119; W. Craig Brown, 3417 Baldoyle La., Las Vegas, Nev. 89129, and Raymond C. Kelly, 3302 E. Oquendo Rd., Las Vegas, Nev. 89120

Filed May 6, 1997, Appl. No. 851,735

This patent is subject to a terminal disclaimer.

***Int. Cl.*[6] G01N** *33/53;1/00*

U.S. Cl. 435—7.92 **3 Claims**

1. A method for determination of use of drugs of abuse from a hair sample comprising:

(i) dividing the hair sample into substantially equal first and second portions and an aliquot third portion;

(ii) determining the concentration of cannabinoid analytes using an enzyme linked immunosorbent assay (ELISA) test kit for *cannabinoids by adding a mixture of an inorganic base and an* aliphatic alcohol, said inorganic base being in a concentration of approximately 0.1%, to the sample first portion, incubating the mixture and portion thereby releasing said analytes into the mixture solution, introducing to the incubated mixture solution a buffer solution including (a) a phosphate buffer, (b) a serum protein, (c) a non-ionic surfactant and (d) a polyhydric alcohol, evaporating the alcohol of the mixture and buffer solution in a nitrogen atmosphere and analyzing the evaporated mixture using the ELISA test kit;

(iii) running a screening series on the second portion for other analytes linked to use of drugs of abuse including,

(a) performing ELISA assay to determine the concentrations of amphetamine and methamphetamine analytes, and

(b) performing a radio immunoassay for cocaine, opiates and phencyclidine derived analytes to determine the concentrations of analytes linked to use of said compounds;

(iv) comparing the concentrations of analytes determined from (ii) and (iii) to preselected threshold analyte concentrations, determined concentrations below said thresholds deemed a negative finding and concentrations above said thresholds deemed a presumptively positive finding; and

(v) for samples having a presumptively positive finding, subjecting the sample third portion to confirmatory assay by gas chromatography/mass spectrometry to quantitatively determine the concentrations of said analytes.

5,910,420

METHOD AND TEST KIT FOR PRETREATMENT OF OBJECT SURFACES

Helena Tuompo, Espoo; Gun Wirtanen, Esbo; Satu Salo; Leena Scheinin, both of Espoo; Ari Batsman, Rusko, and Seija Levo, Espoo, all of Finland, assignors to Orion-Yhtyma Oy Orion Diagnostica, Espoo, Finland

Continuation of application No. PCT/FI97/00481, Aug. 18, 1997. This application Apr. 3, 1998, Appl. No. 54,822.

Claims priority, application Finland, Aug. 16, 1996, 963235; Aug. 18, 1997, PCT/FI97/00481

Int. Cl.[6] **C12Q** *1/34;1/40;1/37;1/54*

U.S. Cl. 435—18 **49 Claims**

1. A method for the pretreatment of an object surface prior to taking a sample for microbial analysis of microorganisms present on the surface, comprising bringing the object surface, at a pH-value suitable for the microorganisms, into contact with a substance which contains as active agent at least one of a chelating agent, a detergent, an alcohol, an amine, a reducing substance, a hydrolytic enzyme or a mixture of hydrolytic enzymes, at a concentration sufficient for detaching the microorganisms from the studied surface so that the amount of substance to be determined does not change during the influence time and that the growth of microorganisms is not essentially hindered.

5,910,421

RAPID DIAGNOSTIC METHOD FOR DISTINGUISHING *ALLERGIES AND INFECTIONS*

Parker A. Small, Jr., and Shih-Wen Huang, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Continuation-in-part of application No. 08/576,604, Dec. 21, 1995, abandoned. This application Mar. 25, 1996, Appl. No. 621,557.

Int. Cl.[6] **C12Q** *1/44*

U.S. Cl. 435—19 **6 Claims**

1. *A method for differentiating between allergic rhinitis, upper respiratory tract viral infection and bacterial sinusitis, which comprises measuring a sample of a patient's nasal secretion, for pH, protein content, nitrite content, esterase activity and eosinophil* counts of the sample, such that a combination of:

(a) a pH between about 7.5 and 9, a moderately strong presence of protein, at least a trace of nitrite and esterase, and low or absent eosinophil counts is indicative of bacterial sinusitis;

(b) a pH between about 5.0 and 7.0, little or no protein, little or *no nitrite, little or no esterase activity and moderate to high* eosinophil counts is indicative of allergic rhinitis; and

(c) a pH between about 5.0 and 7.0, little or no protein, at least a trace of nitrite and esterase and low or absent *cosinophil* counts indicates an upper respiratory tract viral infection.

5,910,422

STABLE SINGLE LIQUID ALPHA-AMYLASE REAGENT

Ivan E. Modrovich; Shing S. Kwan, both of Camarillo, and Leon C. Wortham, Canoga Park, all of Calif., assignors to Medical Analysis Systems, Inc., Camarillo, Calif.

Continuation of application No. 07/074,569, Jul. 17, 1987, abandoned. This application May 10, 1991, Appl. No. 700,996.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] ***C12Q*** *1/40*

U.S. Cl. 435—22 **55 Claims**

1. A single liquid alpha-amylase reagent composition comprising an aqueous solution which is substantially free of alpha-amylase producing microorganisms which comprises:

at least one substrate which is hydrolyzed when mixed with a sample of body fluid containing alpha-amylase to yield directly or indirectly by a reaction involving alpha-amylase to form a detectable label released to the reaction mixture, the rate of formation of said detectable label to the reaction mixture being proportional to the amount of alpha-amylase present in the sample and at least one exo-enzyme to cooperate with the alpha-amylase in the formation of the detectable label; and

a compound selected from the group consisting of diols and polyols present in an amount sufficient to stabilize the exo-enzymes, said substrate being present in a concentration sufficient to prevent the substrate from limiting the rate of hydrolysis thereof , said reagent composition being stable against substrate and enzyme degradation for at least 6 months at 2 to 8° C.

5,910,423

WATER SOLUBLE POWERED FORMULATION OF REAGENT MIXTURE CONTAINING WATER-INSOLUBLE REAGENTS, AND PROCESS FOR THEIR PRODUCTION

Hiroshi Yamazaki, Nepean, and Kouchi Matsumoto, Kanata, both of Canada, assignors to Ricoh Kyosan, Inc., Tokyo, Japan

Filed Apr. 28, 1995, Appl. No. 430,834

Int. Cl.[6] **C12Q** *1/28;1/00*

U.S. Cl. 435—28 **22 Claims**

1. A method for preparing a water-soluble powdered formulation of test reagent containing a solid chromogenic agent which comprises:

(1) melting a water soluble heat-stable polymeric material to provide a molten polymeric material;

(2) dissolving said solid chromogenic agent in said molten polymeric material;

(3) heating said dissolved solid chromogenic agent/molten polymeric material for a predetermined period of time to provide a molten homogenate;

(4) cooling said molten homogenate to its solidification temperature to provide a solidified homogenate; and

(5) pulverizing said solidified homogenate, to provide powdered homogenate reagent.

5,910,424

METASTATIC MELANOMA CELL LINES FROM MONODELPHIS DOMESTICA FOR USE IN ANTI-CANCER AGENT DISCOVERY

Thomas P. Dooley, and Edward S. Robinson, both of San Antonio, Tex., assignors to Southwest Foundation for Biomedical Research, San Antonio, Tex.

Division of application No. 08/253,376, Jun. 3, 1994. This application Dec. 3, 1997, Appl. No. 984,589.

Int. Cl.[6] C12N *5/00*

U.S. Cl. 435—29 **4 Claims**

1. A method of testing potential anti-cancer agents in a Mondelphis having an induced in vivo growth of the derivative cell line of TD15L2 (ATCC No. CRL-11898), comprising the steps of:

(a) injecting the Mondelphis with a non-lethal amount of an anti-cancer agent; and

(b) determining the effect of the anti-cancer agent on the metastatic, pigmented, malignant melanoma growth.

5,910,425

MICROBIAL STRAINS PRODUCING SPHINGOLIPID BASES

Lex De Boer, Wateringen, and Ingrid Francisca Caroline Van Der Wildt, Delft, both of Netherlands, assignors to Gist-Brocades, N.V., Ma Delft, Netherlands

PCT No. PCT/EP94/03652, § 371 Date May 3, 1996, § 102(e) Date May 3, 1996, PCT Pub. No. WO95/12683, PCT Pub. Date May 11, 1995

PCT Filed Nov. 3, 1994, Appl. No. 640,941

Claims priority, application European Pat. Off., Nov. 3, 1993, 93203081; Jul. 8, 1994, 94201986

Int. Cl.[6] C12P *1/00*

U.S. Cl. 435—41 **17 Claims**

1. A method for producing a mutant strain of Pichia that is capable of producing at least 0.030 g tetraacetyl-phytosphingosine (TAPS)/g Pichia dry weight comprising the steps of:

a) obtaining a parent strain of Pichia that is capable of naturally producing TAPS;

b) treating said parent Pichia strain with a mutagen;

c) selecting a mutant strain of Pichia, wherein said mutant strain is capable of producing at least 0.030 g TAPS/g Pichia dry weight when cultured in liquid TAPS medium for a period of 3 days at 24° C. in a conical flask placed on an orbital incubator at 250 rpm.

5,910,426

PROTEIN TYROSINE KINASE

Andrew Frederick Wilks, Doneaster East, Australia; Andrew *Ziemiecki, Berne, United Kingdom, and Ailsa Harpur,* Mooroolbark, Australia, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

***Division* of application No. 08/805,445, Feb. 25, 1997, Pat. No. 5,821,069, which is a division of application No. 08/446,038, May 19, 1995, Pat. No. 5,658,791, which is a division of application No. 08/064,067, filed as application No. PCT/US91/08889, Nov. 26, 1991, Pat. No. 5,852,184. This application *Apr.* 24, 1998, Appl. No. 66,208.**

Claims priority, application Australia, Nov. 28, 1990, PK3594/90

***Int. Cl.[6] C12P** 21/06; **C07K** 1/00*

U.S. Cl. 435—68.1 **7 Claims**

1. A method for phosphorylating a protein, comprising contacting said protein with a phosphorylating effective amount of an isolated mammalian polypeptide comprising an amino acid sequence encoded by a nucleic acid molecule, the complementary *sequence of which hybridizes to SEQ ID NO: 1 or to SEQ ID NO:* 2, at 65° C., 6XSSC, 1% SDS, with a final wash of 0.2×SSC, 0.1% SDS, at 65° C., wherein said polypeptide comprises multiple catalytic domains, but no SH2 domains, for a time and under conditions sufficient for said protein to be phosphorylated.

5,910,427

ANTIGEN NON-SPECIFIC GLYCOSYLATION INHIBITING FACTOR DERIVATIVES

Toshifumi Mikayama, Gunma-machi; Takafumi Tomura; Hiroshi Watarai, both of Maebashi; Ryota Kuroki; Yoichi Kato, both of Yokohama; Kimishige Ishizaka, Yamagata, and Tatsumi Nakano, Sapporo, all of Japan, assignors to La Jolla Institute for Allergy and Immunology, La Jolla, Calif.

Continuation-in-part of application No. 08/503,646, Jul. 18, 1995, abandoned. This application Mar. 4, 1996, Appl. No. 610,728.

Claims priority, application Japan, Jun. 22, 1995, 155942

Int. Cl.[6] C12P *21/00;* **C07K** *14/46;* **A61K** *38/18*

U.S. Cl. 435—69.1 **28 Claims**

1. An antigen non-specific glycosylation inhibiting factor (GIF) derivative, wherein said GIF comprises the amino acid sequence set forth in SEQ ID NO:21, wherein said derivative differs from said GIF by the replacement, deletion, substitution, or chemical modification of amino acid(s) 57 and/or 60 of SEQ ID NO:21, wherein said derivative may be further modified by the replacement, deletion, substitution, or chemical modification of at least one amino acid in the amino acid sequence selected from the group consisting of amino acids 37–45, 47–50, 59, 94–98 and 106–110 of SEQ ID NO:21, wherein the amino acid at position number 1 of SEQ ID NO:21 may be deleted and wherein said derivative has GIF immunosuppressive activity.

5,910,428

BRAIN-DERIVED MEMBRANE-ASSOCIATED CRF BINDING PROTEINS

Dominic P. Behan, San Diego; Wylie W. Vale, Jr., La Jolla; Wolfgang H. Fischer, Encinitas, all of Calif., and Philip J. Lowry, Reading Berks, United Kingdom, assignors to The Salk Institute for Biological Studies, San Diego, Calif.

PCT No. PCT/US94/12672, § 371 Date Jul. 2, 1996, § 102(e) Date Jul. 2, 1996, PCT Pub. No. WO95/13372, PCT Pub. Date May 18, 1995

Continuation-in-part of application No. 08/149,091, Nov. 8, 1993, Pat. No. 5,587,462. This PCT application Nov. 7, 1994, Appl. No. 637,761.

Int. Cl.[6] C07H *21/04;* **C12P** *21/02*

U.S. Cl. 435—69.1 **12 Claims**

1. An isolated and purified DNA segment that encodes a CRF-binding protein which exhibits affinity to CRF, which has a

molecular weight of at least about 33 kD as determined under reducing conditions by SDS PAGE, and which has the amino acid sequence of a native mammalian protein that includes at least one sequence selected from the group consisting of the following sequences of SEQ NO: 1: residues 1–16, residues 20–37, residues 110–120, residues 206–222 and residues 248–256.

5,910,429

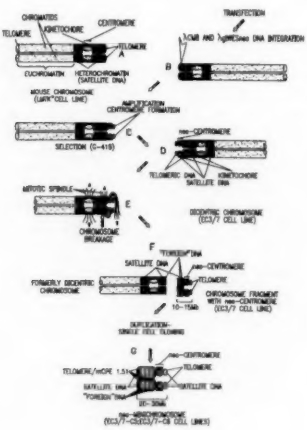
ARTIFICIAL CHROMOSOMES, USES THEREOF AND METHODS FOR PREPARING ARTIFICIAL CHROMOSOMES

Gyula Hadlaczky, Szamos, Hungary, and Aladar A. Szalay, Highland, Calif., assignors to Chromos Molecular Systems, Inc., Canada; The Biological Research Ctr. of the Hungarian Academy of Sciences, Hungary, and Loma Linda Univ., Loma Linda, Calif.

Continuation-in-part of application No. 08/682,080, Jul. 15, 1996, which is a continuation-in-part of application No. 08/629,822, Apr. 10, 1996. This application Aug. 7, 1996, Appl. No. 695,191.

Int. Cl.[6] **C12N** *5/10;15/67;* **C12P** *21/00*

U.S. Cl. 435—69.1 **37 Claims**



1. A method of producing a product that is produced upon expression of a metabolic pathway, comprising culturing a cell comprising an artificial chromosome under conditions whereby the pathway is expressed to produce the product, wherein:

the artificial chromosome is selected from the group consisting of a satellite artificial chromosome and a minichromosome;

the artificial chromosome comprises multiple copies of a heterologous gene or a plurality of heterologous genes; and

the heterologous genes encode proteins that comprise the metabolic pathway.

5,910,430

ISOLATED NUCLEIC ACID ENCODING G-PROTEIN COUPLED RECEPTOR (HTADX50)

Derk J. Bergsma, Berwyn, Pa., and Catherine E. Ellis, Glassboro, N.J., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Jan. 24, 1997, Appl. No. 788,750

Int. Cl.[6] **C12N** *15/12;15/62*

U.S. Cl. 435—69.1 **50 Claims**

1. An isolated polynucleotide comprising a nucleotide sequence that has at least 80% identity to a polynucleotide sequence encoding the polypeptide having the amino acid sequence of SEQ ID NO:2 over the entire coding region for SEQ ID NO:2 wherein said identity is calculated using FASTA set to obtain the highest order match between the sequences.

5,910,431

POLYNUCLEOTIDES ENCODING CHEMOKINE α-2

Jian Ni, Rockville; Reiner L. Gentz, Silver Spring; Jeffrey Y. Su, and Haodong Li, both of Gaithersburg, all of Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

Provisional application No. 60/013,653, Mar. 19, 1996. This application Mar. 19, 1997, Appl. No. 825,556.

Int. Cl.[6] **C12N** *1/00;15/00*

U.S. Cl. 435—69.5 **26 Claims**

1. An isolated nucleic acid molecule comprising a polynucleotide selected from the group consisting of:

(a) a polynucleotide encoding amino acids −28 to 83 of SEQ ID NO:2;

(b) a polynucleotide encoding amino acids −16 to 83 of SEQ ID NO:2;

(c) a polynucleotide encoding amino acids 1 to 83 of SEQ ID NO:2;

(d) a polynucleotide encoding the complete chemokine α-2 polypeptide as encoded by the cDNA clone contained in ATCC Deposit No. 97400;

(e) a polynucleotide encoding the mature chemokine α-2 polypeptide as encoded by the cDNA clone contained in ATCC Deposit No. 97400;

(f) a polynucleotide encoding at least 50 contiguous amino acids from SEQ ID NO:2, wherein said polynucleotide encodes a polypeptide having the same activity as mature chemokine α-2;

(g) a polynucleotide at least 30 nucleotides in length which hybridizes under stringent conditions to the coding region of SEQ ID NO:1, wherein said polynucleotide encodes a polypeptide having the same activity as mature chemokine α-2; and

(h) the complement of (a), (b), (c), (d), (e), (f), or (g).

5,910,432

NITRILE HYDRATASE

Kiyoshi Ito; Toshifumi Yamaki, both of Mobara; Teruo Arii, Chiba; Miyuki Tsuruoka, Yachimata, and Takeshi Nakamura, Ichihara, all of Japan, assignors to Mitsui Chemicals, Inc., Tokyo, Japan

Division of application No. 08/800,751, Feb. 14, 1997, Pat. No. 5,807,730. This application Dec. 15, 1997, Appl. No. 990,818. Claims priority, application Japan, Feb. 14, 1996, 8-027004

Int. Cl.[6] **C12P** *13/02;* **C12N** *9/88;15/60;15/63;1/00;5/10*

U.S. Cl. 435—129 **25 Claims**

1. An nucleic acid sequence which encodes an α-subunit of the nitrile hydratase having the amino acid sequence contained in SEQ ID NO: 1.

5,910,433

KETO GROUP-INTRODUCING ENZYME, DNA CODING THEREFOR AND METHOD FOR PRODUCING KETOCAROTENOIDS

Susumu Kajiwara, Tokyo; Norihiko Misawa, and Keiji Kondo, both of Kanagawa, all of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP95/01640, § 371 Date Apr. 23, 1996, § 102(e) Date Apr. 23, 1996, PCT Pub. No. WO96/06172, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 18, 1995, Appl. No. 632,434

Claims priority, application Japan, Aug. 23, 1994, 6-198775; Sep. 19, 1994, 6-223798; Mar. 7, 1995, 7-047266

Int. Cl.[6] **C12P** *7/26;* **C12N** *9/02;1/12;* **C07H** *21/04*

U.S. Cl. 435—148 **16 Claims**

1. An isolated and purified DNA comprising a base sequence coding for a polypeptide obtained from an organism selected from the group consisting of Haematococcus and crustaceans, said polypeptide having an enzyme activity to convert the methylene group at position 4 of a β-ionone ring in a compound containing a β-ionine ring to a keto group.

5,910,434

METHOD FOR OBTAINING RETROVIRAL PACKAGING CELL LINES PRODUCING HIGH TRANSDUCING EFFICIENCY RETROVIRAL SUPERNATANT

Richard J. Rigg, Mountain View; Jingyi Chen, Fremont; Jonathan S. Dando, Sunnyvale; Ivan Plavec; Sean P. Forestell, both of Menlo Park, and Ernst Bohnlein, Los Altos, all of Calif., assignors to SyStemix, Inc., Palo Alto, Calif.

Filed Dec. 15, 1995, Appl. No. 572,959

Int. Cl.[6] **C12N** *5/10;15/63;15/67*

U.S. Cl. 435—172.3 **23 Claims**

1. A method for obtaining a recombinant retroviral packaging cell capable of producing retroviral vectors comprising:

a. selecting a retrovirus;

b. obtaining a eukaryotic cell free of endogenous retroviral nucleic acid of the same type as the retrovirus of step (a);

c. preparing a minimal gag-pol open reading frame (ORF) insert from the retrovirus wherein the ORF contains no flanking sequences of the gag-pol gene;

d. inserting the minimal gag-pol ORF prepared from step (c) into an appropriate expression plasmid, wherein the gag-pol ORF is operatively linked to a heterologous promoter having no overlap with the retroviral vector;

e. preparing a minimal env open reading frame (ORF) insert from the retrovirus wherein the ORF contains no flanking sequences of the env gene;

f. inserting the minimal env ORF prepared from step (e) into an appropriate expression plasmid, wherein the env ORF is operatively linked to a heterologous promoter having no overlap with the retroviral vector;

g. inserting the expression plasmids of steps (d) and (f) into the cell of step (b);

h. propagating the cell obtained from step (g) under conditions favorable for expression of the minimal retroviral gag-pol and env ORF; and

i. screening a cell for retroviral Gag, Pol and Env production by the cell of step (h); thereby obtaining the retroviral packaging cell capable of packaging recombinant retroviral vector sequences to produce recombinant, transducing retrovirus.

5,910,435

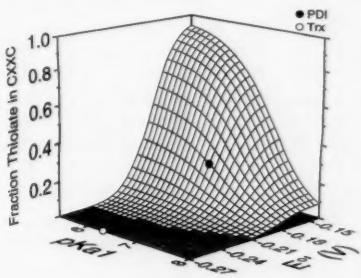
METHOD OF FOLDING PROTEINS WITH SYNTHETIC DITHIOL CATALYSTS

Ronald T. Raines, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 25, 1996, Appl. No. 687,276

Int. Cl.[6] **C12N** *9/96;9/00;* **C12P** *21/06;* **A61K** *38/00;* **C07K** *1/00*

U.S. Cl. 435—188 **9 Claims**



1. A method of catalyzing the formation of disulfide linkages in a protein having non-native disulfide bonds to cause the protein to assume a biologically active conformation without the necessity for denaturation of the protein comprising the step of:

(a) exposing the protein having the non-native disulfide bonds to a dithiol protein folding catalyst, the protein folding catalyst being a non-protein dithiol molecule capable of forming an intramolecular disulfide bond and having a pK_a of less than about 8.0 and an $E^{o'}$ of more than about −0.25 V.

5,910,436

TREHALOSE PHOSPHORYLASE, ITS PREPARATION AND USES

Tetsuya Nakada; Michio Kubota; Hiroto Chaen, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Division of application No. 08/966,389, Nov. 7, 1997. This application Jun. 23, 1998, Appl. No. 102,644.

Claims priority, application Japan, Nov. 8, 1996, 8-311232; Mar. 3, 1997, 9-061716

Int. Cl.[6] **C12N** *9/10;1/20;15/00;* **C07H** *21/04*

U.S. Cl. 435—193 **6 Claims**

1. An isolated DNA which encodes a trehalose phosphorylase which is obtainable from a microorganism of the genus Thermoanaerobium and which hydrolyzes trehalose in the presence of a compound selected from the group consisting of an inorganic phosphoric acid, a salt thereof, and a mixture thereof to form D-glucose and a compound selected from a group consisting of β-D-glucose- 1-phosphoric acid, a salt thereof, and a mixture thereof.

5,910,437

D-ENZYME COMPOSITIONS AND METHODS OF THEIR USE

Stephen Brian Henry Kent; Saskia Charlotte Florence Milton, and Raymond Cecil deLisle Milton, all of La Jolla, Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation of application No. 08/343,585, Dec. 2, 1994, which is a continuation-in-part of application No. 07/894,817, Jun. 8, 1992, abandoned. This application May 22, 1996, Appl. No. 651,303.

Int. Cl.[6] **C12N** *9/48;9/00;* **A61K** *38/16;38/43;* **C07K** *1/00*

U.S. Cl. 435—212 **5 Claims**

1. A ligated D-protein represented by the formula:

R—L—R'

wherein:

R and R' are D-peptides, each of R and R' having a length of at most 100 amino acid residues, at least one of R and R' having a-length of at least 50 amino acids and

L represents a linkage unit for ligating R to R', L being selected from a group consisting of thiol ester and selenol ester linkage units.

5,910,438

CLONING AND/OR SEQUENCING VECTOR

Philippe Bernard, and Philippe Gabant, both of Brussels, Belgium, assignors to Universite Libre de Bruxelles, Belgium

PCT No. PCT/BE93/00051, § 371 Date Jul. 20, 1995, § 102(e) Date Jul. 20, 1995, PCT Pub. No. WO94/03616, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 2, 1993, Appl. No. 379,614

Claims priority, application Belgium, Jul. 31, 1992, 9200696

Int. Cl.[6] **C12N** *1/21;15/70*

U.S. Cl. 435—252.3 **14 Claims**

1. An autonomously replicating cloning and/or sequencing vector adapted to transform a procaryotic cell, said vector comprising at least one promoter nucleotide sequence and at least one nucleotide sequence which encodes a fusion protein which is active as a poison to the procaryotic cell, said nucleotide sequence which encodes a fusion protein being obtained by fusing a coding nucleotide sequence, which comprises several cloning sites, and a nucleotide sequence which encodes protein poison CcdB.

5,910,439

METHOD OF DEGRADING MONILIFORMIN WITH OCHROBACTRUM

Jon Duvick, and Tracy A. Rood, both of Des Moines, Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Division of application No. 08/753,317, Nov. 22, 1996. This application Jan. 29, 1998, Appl. No. 15,844.

Int. Cl.[6] **B09B** *3/00;* **C12N** *1/20;* **C12S** *13/00*

U.S. Cl. 435—262.5 **9 Claims**

1. A method of degrading moniliformin on a plant comprising topically applying to said plant a composition comprising an *Ochrobactrum bacterium* which degrades moniliformin.

5,910,440

METHOD FOR THE REMOVAL OF ORGANIC SULFUR *FROM CARBONACEOUS MATERIALS*

Matthew J. Grossman, Flemington; Michael Siskin, Randolph; David T. Ferrughelli, Flemington; M. Kathryn Lee, Plainfield, all of N.J., and James D. Senius, Seabrook, Tex., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 12, 1996, Appl. No. 632,040

Int. Cl.[6] **A01N** *63/00;* **C02F** *3/00;* **C10G** *32/00;* **C12N** *1/00*

U.S. Cl. 435—282 **15 Claims**

1. A process to remove organic sulfur from carbonaceous materials, fuels, and fuel precursors containing at least one organic sulfur compound having sulfur-carbon bonds, the steps of the process comprising:

(a) oxidizing said organic sulfur compound to a chemical compound selected from the group consisting of sulfone compounds and sulfoxide compounds and combinations thereof; and

(b) reacting chemically said chemical compound in an aqueous medium including a hydride transfer reducing agent to reduce the sulfur in said chemical compound.

5,910,441

DNA ENCODING FIBRONECTIN AND FIBRINOGEN BINDING PROTEIN FROM GROUP A STREPTOCOCCI

Claudia Rocha, New York, and Vincent A. Fischetti, West Hempstead, both of N.Y., assignors to The Rockefeller University, New York, N.Y.

Filed Sep. 16, 1996, Appl. No. 714,402

Int. Cl.[6] **C12N** *15/00;5/00;* **C07H** *21/04*

U.S. Cl. 435—320.1 **11 Claims**

1. A purified DNA fragment encoding the Streptococcal fibrinogen and fibronectin binding protein (SFFBP-12)(SEQ ID NO: 2).

5,910,442

TUMOR SUPPRESSOR GENE

Irwin H. Gelman, New York, N.Y., assignor to Mount Sinai School Of Medicine, NY, N.Y.

Filed Apr. 19, 1996, Appl. No. 635,121

Int. Cl.[6] **C12N** *15/11;15/09;5/10;15/79*

U.S. Cl. 435—325 **3 Claims**

1. An isolated nucleic acid molecule comprising the nucleic acid sequence set forth in SEQ ID NO.1.

2. A vector comprising the nucleic acid molecule of claim 1.

3. An isolated host cell comprising the nucleic acid molecule of claim 1.

5,910,443

MEDIUM FOR CULTURING HUMAN OLFACTORY NEURONS

Hyden G. Coon, Gaithersburg, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of application No. 07/487,894, Mar. 6, 1990, abandoned. This application Sep. 25, 1992, Appl. No. 950,560.

Int. Cl.[6] **C12N** *5/00*

U.S. Cl. 435—404 **1 Claim**

1. A tissue culture medium designated Coon's 4506.

5,910,444

PLANTS IN WHICH THE EXPRESSION OF S-ADENOSYLHOMOCYSTEINE HYDROLASE GENE IS INHIBITED

Chikara Masuta; Kyoko Uehara; Hideo Tanaka, and Shigeru Kuwata, all of Yokohama, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

PCT No. PCT/JP95/02333, § 371 Date Jul. 12, 1996, § 102(e) Date Jul. 12, 1996, PCT Pub. No. WO96/14734, PCT Pub. Date May 23, 1996

PCT Filed Nov. 15, 1995, Appl. No. 669,536

Claims priority, application Japan, Nov. 15, 1994, 6-304200

Int. Cl.[6] **A01H** *4/00;* **C07H** *21/00;* **C12N** *5/14;* **C07K** *14/415*

U.S. Cl. 435—419 **6 Claims**

1. A transgenic plant in which the expression of S-adenosylhomocysteine hydrolase (SAHH) gene present in its genome is inhibited by inserting all or part of an SAHH gene into the genomic DNA of said plant in a reverse direction such that the reversed SAHH gene induces transcription of an antisense RNA against the endogenous SAHH gene and SAHH enzymatic activity is inhibited.

5,910,445
SYSTEM FOR THE DETECTION OF PROTEIN CONTAMINATION ON AN ELECTRODE

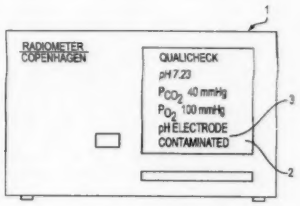
Eiler Larsen, Brondby, Denmark, assignor to Rolic AG, Zug, Switzerland

Continuation of application No. 07/221,792, filed as application No. PCT/DK87/00149, Dec. 2, 1987, abandoned. This application Aug. 6, 1991, Appl. No. 741,984.

Claims priority, application Denmark, Dec. 3, 1986, 5806/86

Int. Cl.[6] G01N *33/48*

U.S. Cl. 436—5 **3 Claims**



1. A method for revealing the presence of protein contamination on the measuring surface of a pH measuring electrode, comprising the steps of:

contacting the pH measuring electrode with a synthetic quality control liquid having a controlled specified pH value and comprising an amount of cations selected from the group consisting of Ca^{+2}, Cu^{+2}, Fe^{+2} and Co^{+2} greater than 0.1 mmol/l., said amount being sufficient to shift the pH response of a protein contaminated pH electrode to a value different from the specified pH value of the quality control liquid;

comparing the pH value measured for the quality control liquid with the specified pH value; and

using the outcome of the comparison to indicate whether or not protein contamination is present, taking a lower measured pH value than the specified pH value as an indication of the presence of protein contamination on the measuring surface of the pH measuring electrode.

5,910,446
DETECTION OF HEAT STABLE PROTEINS FROM MEAT OF RUMINANT

Michael Ansfield, Stratford-upon-Avon, United Kingdom, assignor to The Secretary of State for the Minister of Agriculture Fisheries & Food in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

PCT No. PCT/GB94/01715, § 371 Date Feb. 15, 1996, § 102(e) Date Feb. 15, 1996, PCT Pub. No. WO95/05603, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 4, 1994, Appl. No. 596,189

Claims priority, application United Kingdom, Aug. 18, 1993, 9317199

Int. Cl.[6] G01N *33/12;33/68;33/53*

U.S. Cl. 436—21 **13 Claims**

1. A method for pretreating heat stable proteins derived material from a rendered animal prior to performing an assay for their presence comprising the steps of:

(a) preparing a protein-containing liquid extract from material from a rendered animal,

(b) adding a salt to the extract to precipitate gelatin from the extract,

(c) separating the gelatin precipitated from the extract,

(d) increasing the concentration of the salt until a portion of the remaining protein is precipitated and isolating that protein.

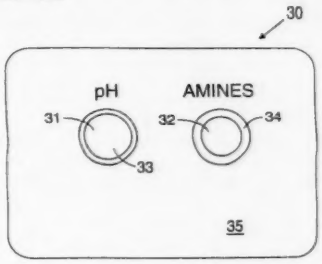
5,910,447
PH AND AMINE TEST TO DIAGNOSIS OF VAGINAL INFECTIONS

Paul J. Lawrence, Campbell; Peter U. Ly, San Jose, and David R. Shockey, Cupertino, all of Calif., assignors to Litmus Concepts, Inc., Santa Clara, Calif.

Division of application No. 08/689,758, Aug. 13, 1996, Pat. No. 5,660,790. This application Mar. 18, 1997, Appl. No. 819,789.

Int. Cl.[6] G01N *33/48*

U.S. Cl. 436—111 **2 Claims**



1. A method for the identification of a condition indicative of bacterial vaginosis in a patient by analyzing a sample of vaginal fluid from said patient, said method comprising determining whether said vaginal fluid tests positive in both of the following tests:

(1) a test for pH equal to or greater than a selected transition point within the range of 4.6 to 4.8, performed by applying said sample to a composition comprising a first pH indicator containing an ionizable phenol group and a negatively charged group, dispersed in a solid hydrophilic fluid-permeable polymer containing quaternary ammonium groups in sufficient quantity to immobilize said pH indicator against diffusion when wetted with an aqueous liquid sample and to cause said indicator to change color at said first selected transition point; and

(2) a test for salts of volatile amines, performed by applying said sample to a solid alkali and a gas-permeable indicator lamina of material permeable to gas but impermeable to aqueous liquids, impregnated with an indicator that undergoes a detectable transition upon contact with amines.

5,910,448
PROCESS FOR ANALYZING CO_2 IN AIR AND IN WATER

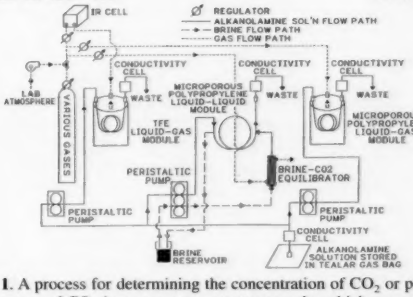
James E. Atwater, Eugene; James R. Akse, Roseburg, and Jeffrey DeHart, Yoncalla, all of Oreg., assignors to Umpqua Research Company, Myrtle Creek, Oreg.

Continuation-in-part of application No. 08/332,570, Oct. 31, 1994, Pat. No. 5,643,799. This application Apr. 4, 1997, Appl. No. 826,645.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] G01N *33/18*

U.S. Cl. 436—133 **18 Claims**



1. A process for determining the concentration of CO_2 or partial pressure of CO_2 in a seawater or water sample, which comprises:

providing a control solution, including an alkanolamine chemical reagent, that absorbs large quantities of CO_2 by a reversible reaction with CO_2 producing conductive ionic CO_2 reaction products;

providing a membrane contactor having a membrane located therewithin for separating said seawater or water sample and said control solution, said membrane being permeable to CO_2 but impermeable to conductive ionic CO_2 reaction products;

measuring the specific conductance of the control solution before exposure to CO_2;

introducing said seawater or water sample and said control solution into said membrane contactor, the seawater or water sample flowing through the membrane contactor on the opposite side of the membrane from the control solution;

transporting CO_2 from said seawater or water sample through the membrane into said control solution;

chemically amplifying conductive species in the said control solution through reversible reactions between CO_2 and the chemical reagent which produces said conductive ionic CO_2 reaction products;

measuring the specific conductance of the control solution including said conductive ionic CO_2 reaction products; and

determining partial pressure of CO_2 or CO_2 concentration in the seawater or water sample by comparing the difference between the specific conductance of the control solution including said conductive ionic CO_2 reaction products and the specific conductance of the control solution before exposure to CO_2, and comparing this difference to known partial pressure of CO_2 or CO_2 calibration values.

5,910,449

ASSESSMENT OF CHARACTERISTICS OF FLUIDS

Matthew Jonathan Rooney, West Bridgford, United Kingdom, assignor to Naked Eye Limited, United Kingdom

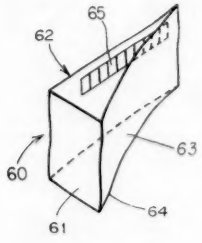
Continuation-in-part of application No. 08/256,654, filed as application No. PCT/GB93/00151, Aug. 29, 1994, Pat. No. 5,538,900. This application May 24, 1996, Appl. No. 712,044.

Claims priority, application United Kingdom, Jan. 22, 1992, 92 01 348

This patent is subject to a terminal disclaimer.

Int. Cl.[6] **G01N** *21/03*

U.S. Cl. 436—165 **21 Claims**



1. An apparatus for assessing a characteristic of a fluid in respect to its effect on the transmission of radiation through the fluid, comprising a chamber for receiving the fluid, said chamber including wall portions, arranged for passage of radiation therethrough and through the fluid between said wall portions, and fixed means for examining the effect of transmission of the radiation through the fluid at different parts of the chamber, said fixed means being fixed in use to said chamber, and said fixed means being adapted along at least one preselected axis so as to progressively facilitate an examination of the passage of radiation through the fluid whereby said characteristic can be assessed.

5,910,450

PROCESS AND DEVICE FOR ENRICHING GAS, VAPOR AND/OR AEROSOL EMISSIONS RELEASED FROM AN OBJECT

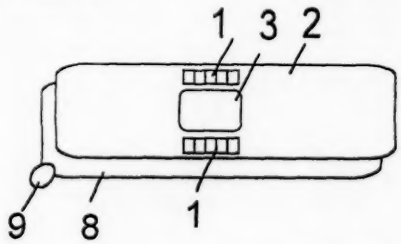
Andreas Manns, Lübeck; Thomas Wuske, Malente; Dirk Zastrow, and Sabine Grantz, both of Lübeck, all of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Filed Aug. 6, 1996, Appl. No. 692,723

Claims priority, application Germany, Oct. 13, 1995, 195 38 075

Int. Cl.[6] **G01N** *1/22;33/536;27/00;* **F26B** *3/00*

U.S. Cl. 436—181 **23 Claims**



1. A process for enriching substance emissions released from an object emitting pollutants in the form of gases, vapors and aerosols, the object having a surface, the process comprising the steps of:

providing an adsorption layer;

fixing said adsorption layer on the surface of the object emitting pollutants, which is to be analyzed, by means of an adhesive tape projecting over the adsorption layer on all sides, to offer adhesive surfaces for application to the object and to hermetically seal the adsorption layer against the ambient air;

feeding substance emissions to said adsorption layer by diffusion or penetration; and

enriching the substance emissions in the adsorption layer by adsorption.

5,910,451

TROPHININ AND TROPHININ-ASSISTING PROTEINS

Michiko N. Fukuda, San Diego, Calif., assignor to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation of application No. 08/439,818, May 12, 1995, Pat. No. 5,654,145, which is a continuation-in-part of application No. 08/317,522, Oct. 4, 1994, Pat. No. 5,599,918. This application Oct. 10, 1996, Appl. No. 728,626.

Int. Cl.[6] **G01N** *33/53;* **C12Q** *1/68;* **C07K** *13/00;15/26*

U.S. Cl. 436—501 **9 Claims**

1. A substantially purified trophinin, wherein the trophinin comprises the amino acid sequence shown as SEQ ID NO:2 in FIG. **3**.

5,910,452

METHOD FOR REDUCING ANTENNA EFFECT DURING PLASMA ETCHING PROCEDURE FOR SEMICONDUCTOR DEVICE FABRICATION

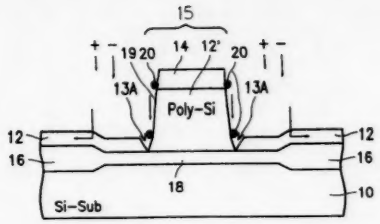
Tzong-Kuei Kang, Hsien; Huang-Chung Cheng, Hsinchu City; Chun-Hsing Shih, Taipei City, and Chun-Hung Peng, Hsinchu City, all of Taiwan, assignors to Winbond Electronics Corporation, Taiwan

Filed May 13, 1996, Appl. No. 645,087

Int. Cl.[6] **H01L** *21/00*

U.S. Cl. 438—710 **14 Claims**

1. A method of fabricating a semiconductor device wherein the semiconductor device includes a gate oxide and a conductive layer respectively formed over a surface of a silicon substrate, the semiconductor device further having a gate structure formed from



a portion of the conductive layer, so as to be positioned over the gate oxide layer, said method including:

etching the conductive layer with a plasma, so as to form a trench entirely through the conductive layer at a root of a sidewall of the gate structure, thereby providing a gap that physically separates the conductive layer from the gate structure.

5,910,453

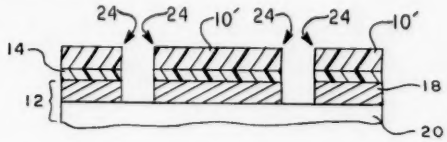
DEEP UV ANTI-REFLECTION COATING ETCH

Subhash Gupta, and Mutya Vicente, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 16, 1996, Appl. No. 584,941

Int. Cl.[6] H01L *21/302*

U.S. Cl. 438—717 **18 Claims**



1. A process for transferring a pattern formed in a layer of photoresist to layer of organic polymeric compound formed over a semiconductor substrate, said process comprising the steps of:

(a) forming said layer of organic polymeric compound over said semiconductor substrate, said layer of organic polymeric compound having a surface;

(b) forming a layer of photoresist on said layer of organic *polymeric compound;*

(c) patterning said layer of photoresist thereby exposing the surface of said layer of organic polymeric compound, wherein said patterning involves exposing said layer of photoresist to light and subsequently developing said layer of photoresist; and

(d) removing said layer of organic polymeric compound which is exposed by etching said exposed layer of organic polymeric compound with a mixture of oxygen plasma, nitrogen plasma, and at least one inert gas, wherein said nitrogen plasma facilitates the removal of atomic oxygen and wherein said at least one inert gas facilitates the cooling of said layer of photoresist.

5,910,454

COFFEE-BASED SOLID FUEL COMPOSITION

Rodney K. Sprules, 88 Greynam Court, Nepean, Ontario, Canada, K2G 5T3

Filed May 29, 1998, Appl. No. 86,797

Int. Cl.[5] C10L *5/40;5/48*

U.S. Cl. 44—535 **11 Claims**

1. A processed solid burnable fuel composition comprising greater than 70% dried spent coffee grounds and further including up to 25% of a solid combustible binder.

5,910,455

HAND CLEANSER

Peter Maddern, N. Wales, United Kingdom, and Serge Khalifa, Worben, Switzerland, assignors to Kimberly Clark Corp., Neenah, Wis.

Filed Sep. 12, 1996, Appl. No. 712,737

Int. Cl.[6] B32B *5/02*

U.S. Cl. 442—60 **9 Claims**

1. An abrasive hand cleansing material comprising a substrate having at least one abrasive surface, the substrate being impregnated with an aqueous hand cleansing formulation comprising from about 1 to 20% by weight of a blend of paramenthadienes, together with one or more oily emulsifiers and from 1 to 10% by weight of one or more organic co-solvents capable of solubilizing polar contaminants, the organic co-solvents being selected from the group consisting of PPG-2 methyl ether. PPG-1 n-propyl ether, PPG-2 n-butyl ether, PPG-2 dimethyl ether, ethyl lactate, and ethylhexyl lactate.

5,910,456

PREPREGS AND CARBON FIBER-REINFORCED COMPOSITE MATERIALS

Yoji Matsuhisa, Matsuyama; Masanobu Kobayashi, Iyo-gun; Akira Okuda, Iyo, and Kazuharu Shimizu, Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

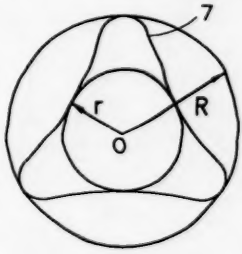
PCT No. PCT/JP96/00014, § 371 Date Sep. 9, 1996, § 102(e) Date Sep. 9, 1996, PCT Pub. No. WO96/21695, PCT Pub. Date Jul. 18, 1996

PCT Filed Jan. 9, 1996, Appl. No. 702,726

Claims priority, application Japan, Jan. 9, 1995, 7-018431; Jan. 10, 1995, 7-018594

Int. Cl.[6] B32B *5/02*

U.S. Cl. 442—179 **35 Claims**



***1**. A prepreg comprising noncircular cross-section carbon fibers* and a matrix resin having a flexural elastic modulus of 2.7 GPa or more and having a water absorption of 3.4% or less under a hot-wet condition after curing.

5,910,457

WOVEN BELT WEBBING FOR A VEHICLE OCCUPANT RESTRAINING SYSTEM

Andreas Kolb, Schwäbisch Gmünd, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

PCT No. PCT/EP96/01360, § 371 Date Dec. 6, 1996, § 102(e) ***Date Dec. 6, 1996, PCT Pub. No. WO96/31642, PCT Pub.*** **Date Oct. 10, 1996**

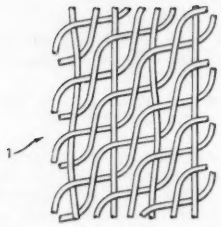
PCT Filed Mar. 28, 1996, Appl. No. 737,884

Claims priority, application Germany, Apr. 7, 1995, 195 13 259

Int. Cl.[6] D03D *23/00*

U.S. Cl. 442—203 **5 Claims**

1. A woven belt webbing for a vehicle occupant restraining system, said belt webbing comprising:



weft threads and warp threads forming a weave, said warp threads consisting of a first type having, when extended, a first length, and of a second type having, when extended, a second length,

said second length being approximately 20% longer than said first length so that an initial tensile load acting on said belt webbing and not exceeding a predetermined threshold level is taken up exclusively by stretching of said warp threads of said first type,

said warp threads of said first type further stretching to take up additional tensile load in excess of said predetermined threshold level and being assisted in taking up said additional tensile load by stretching of said warp threads of said second type.

5,910,458

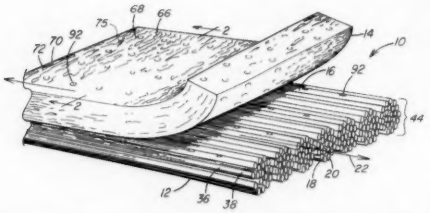
GLASS FIBER MATS, THERMOSETTING COMPOSITES REINFORCED WITH THE SAME AND METHODS FOR MAKING THE SAME

Kenneth D. Beer, Vandergrift, Pa.; Christopher G. Cross, Forest City, N.C.; Thomas V. Thimons, Allison Park, and Thomas P. Unites, Library, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 30, 1997, Appl. No. 866,775

Int. Cl.[6] D04H *1/74;* **B32B** *5/06*

U.S. Cl. 442—367 **25 Claims**



1. A mat adapted to reinforce a thermosetting matrix material, the mat comprising:

(a) a primary layer comprising a plurality of generally parallel, essentially continuous glass fiber strands oriented generally parallel to a longitudinal axis of the mat, at least a portion of outer surfaces of the plurality of the glass fiber strands having thereon a layer comprising a first coating composition which is compatible with a thermosetting matrix material, the first coating composition comprising a polymeric film-forming material which is selected from the group consisting of thermosetting materials, vinyl acetate materials and thermoplastic polyester materials, the primary layer of the mat having a surface weight ranging from about 585 to about 10,350 grams per square meter and comprising about 45 to about 90 weight percent of the mat on a total solids basis; and

(b) a secondary layer positioned adjacent to a surface of the primary layer, the secondary layer comprising a plurality of randomly oriented, generally continuous glass fiber strands, at least a portion of outer surfaces of the plurality of the glass fiber strands of the secondary layer having thereon a layer comprising a second coating composition which is compatible with the thermosetting matrix material, the second coating composition comprising a polymeric film-forming material which is selected from the group consisting of thermosetting materials, vinyl acetate materials and thermoplastic polyester materials, wherein the strands of the primary layer are entangled with the strands of the secondary layer by needling together at least a portion of the strands of the primary layer and the strands of the secondary layer to form a mat, the secondary layer of the mat having a surface weight ranging from about 715 to about 1,150 grams per square meter.

5,910,459

GLASS-CERAMIC CONTAINING A STABILIZED HEXACELSIAN CRYSTAL STRUCTURE

George H. Beall, Big Flats; Hans J. Holland, Painted Post, and Jeffrey T. Kohli, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Provisional application No. 60/008,149, Oct. 31, 1995, Provisional application No. 60/022,976, Aug. 2, 1996. This application Oct. 28, 1996, Appl. No. 742,611.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] C03C *10/06*

U.S. Cl. 501—8 **7 Claims**

1. A glass-ceramic having a primary crystal phase that has a diffraction pattern indicative of the same crystalline structure as hexacelsian, except for a shift in the diffraction line at approximately 22 degrees 2 θ, said glass-ceramic exhibiting a stabilized thermal expansion such that the thermal expansion vs. temperature curve does not have a slope change or hook that is characteristic of hexacelsian between the temperature of 200 and 800° C., the primary crystal phase being hexacelsian solid solution and the glass-ceramic having a composition consisting essentially of, in weight % on an oxide basis, 40–50% SiO_2, 8–20% Al_2O_3, 10–24% MgO, 8–22% BaO, 8–12% TiO_2 and 0–3% ZnO.

5,910,460

GLASS PRODUCTION METHOD USING WUESTITE

Bret E. Penrod, Toledo, Ohio, assignor to Libbey-Ownes-Ford Co., Toledo, Ohio

Continuation of application No. 08/472,189, Jun. 7, 1995, which is a continuation of application No. 08/285,652, Aug. 3, 1994, Pat. No. 5,478,783. This application Oct. 21, 1997, Appl. No. 955,106.

Int. Cl.[6] C03C *6/00*

U.S. Cl. 501—27 **2 Claims**

1. In a process for producing a soda-lime-silica glass containing oxides of iron, including admixing, heating and melting a soda-lime-silica float glass batch mixture comprising sand, soda ash, dolomite, limestone, and a sulfate selected from the group consisting of salt cake and gypsum, the improvement comprising including in said batch wuestite as at least a partial source of the iron oxides in the resulting glass.

5,910,461

GLASS FIBERS FOR REINFORCING ORGANIC MATERIALS, AND COMPOSITES OBTAINED THEREBY

Jean-Philippe Gasca, Saint-Jean de la Porte; Michel Arpin, La Motte Servolex; Denis Malgrange, Courbevoie, and Daniel Caurant, Epinay, all of France, assignors to Vetrotex France, Chambery, France

Continuation of application No. 08/404,439, Mar. 15, 1995, abandoned. This application Nov. 28, 1997, Appl. No. 980,356.

Claims priority, application France, Mar. 15, 1994, 94 02973

Int. Cl.[6] C03C *13/00*

U.S. Cl. 501—35 **26 Claims**

1. Glass fiber for reinforcing organic materials and having an alumino-silicate glass composition, said composition further comprising one or more alkaline earth metal compounds and having

less than 2% by weight of alkali metal oxides, and wherein the composition further comprises a combination of coloring agents of iron oxides, cobalt oxide and, optionally, chromium oxide, said coloring agents providing bulk dyeability to the glass fibers, and said glass composition is an oxidized glass composition.

5,910,462

ZIRCONIA PARTICLES

Mary Susan Jean Gani, 27 Stockdale Avenue, Clayton North, Victoria 3168, Australia; Hans-Jurgen Wirth, 6 Baringa Ave., Kallista, Victoria 3791, Australia; Marie Isabel Aguilar, Lot 21, Glynns Road, Warrandyte, Victoria 3113, Australia; Milton Thomas William Hearn, 263 Union Road, Balwyn, Victoria 3103, Australia; Donald George Vanselow, 54 Greenways Road, Glen Waverley, Victoria 3150, Australia; Philip Hong Ning Cheang, Nanyang Technological University, School of Applied Science, Division of Materials Engineering, Nanyang Avenue, Singapore, Singapore, and Kjell-Ove Eriksson, P.O. Box 278 (Hickory Hills Dr. 49), Bath, Pa. 18014

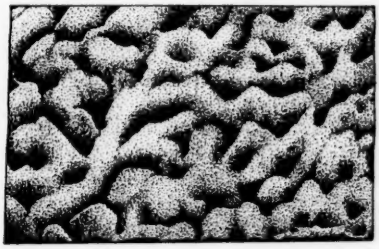
PCT No. PCT/AU94/00425, § 371 Date Jun. 4, 1996, § 102(e) Date Jun. 4, 1996, PCT Pub. No. WO95/04012, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 28, 1994, Appl. No. 591,609

Claims priority, application Australia, Jul. 28, 1993, PM 0247; Jul. 28, 1993, PM 0248

Int. Cl.[6] C04B *35/48;35/653;38/04*

U.S. Cl. 501—80 **49 Claims**



1. A method for the production of porous zirconia comprising the following steps in sequence:

(a) heating a zirconia-silica composition to provide particles of said composition in a substantially homogeneous liquid melt form;

(b) quenching said particles to effect spinodal decomposition of the liquid melt to provide quenched particles comprising a silica-rich phase and a zirconia-rich phase, wherein said zirconia-rich phase comprises zirconia substantially in a tetragonal form;

(c) annealing said quenched particles to transform the tetragonal form of the zirconia rich phase to the monoclinic form on cooling so as to provide annealed particles comprising a continuous monoclinic zirconia-rich phase and a continuous silica-rich phase;

(d) leaching said silica-rich phase from the annealed particles to provide porous monoclinic zirconia particles each of said particles comprising a three dimensionally continuous interpenetrating network of interconnected pores, said pores being of substantially constant diameter throughout their length.

5,910,463

CATALYST SUPPORTS, SUPPORTED METALLOCENE CATALYSTS AND THEIR USE FOR THE PREPARATION OF POLYOLEFINS

Eberhard Ernst, Katsdorf; Jens Reussner, Traun, and Wolfgang Neissl, Lichtenberg, all of Austria, assignors to Borealis AG, Austria

Continuation of application No. 08/458,484, Jun. 2, 1995, abandoned. This application Jul. 14, 1997, Appl. No. 891,994. Claims priority, application Austria, Jun. 3, 1994, 1130/94

Int. Cl.[6] C08F *4/02*

U.S. Cl. 502—107 **4 Claims**

1. Process for preparing a catalyst support, which comprises

a) dehydrating a macroporous, particulate hydrophilic aluminum oxide, silicon oxide, titanium oxide or zirconium oxide or a mixture of said oxides or their mixed oxides, with a mean primary particle size of 3 nm to 110 nm at from 110 to 800° C.,

b) reacting the product of step a) with an aluminoxane and subsequently

c) reacting the product of step b) with polyfunctional organic crosslinkers.

5,910,464

CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Luigi Resconi, Ferrara; Maurizio Galimberti, Milan; Fabrizio Piemontesi, Borgosesia; Floriano Guglielmi, Ferrara, and Enrico Albizzati, Arona, all of Italy, assignors to Montell Technology Company bv, Hoofddorp, Netherlands

Continuation of application No. 08/819,105, Mar. 17, 1997, abandoned, which is a continuation of application No. 08/589,058, Jan. 19, 1996, abandoned, which is a continuation of application No. 08/468,769, Jun. 6, 1995, abandoned, which is a continuation of application No. 08/140,579, Oct. 21, 1993, abandoned, which is a continuation-in-part of application No. 08/079,133, Jun. 18, 1993, abandoned. This application Jan. 7, 1998, Appl. No. 3,928.

Claims priority, application Italy, Jun. 18, 1992, MI921497 U; Jun. 18, 1992, MI941498 U; Sep. 24, 1992, MI922179 U

Int. Cl.[6] C08F *4/64;4/42*

U.S. Cl. 502—111 **10 Claims**

1. A catalyst for the polymerization of olefins comprising the product obtained by contacting the following components:

(A) a cyclopentadienyl compound of the formula (I):

$$(C_5R^1_{x-m}H_{5-x})R^2_m(C_5R^1_{y-m}H_{5-y})_nMQ_{3-n} \quad (I)$$

wherein M is a metal selected from the group consisting of Ti, Zr and Hf; $C_5R^1_{x-m}H_{5-x}$ and $C_5R^1_{y-m}H_{5-y}$, which are the same or different from each other, are cyclopentadienyl rings; wherein the substituents R^1 are the same or different from each other, and are selected from the group consisting of $Si(CH_3)_3$, alkyl, alkenyl, aryl, alkylaryl and arylalkyl radicals, said radicals having from 1 to 20 carbon atoms and optionally having Si or Ge atoms, or wherein one pair of R^1 substituents of the same cyclopentadienyl group forms a ring having from 4 to 6 carbon atoms and the other R^1 substituents are as defined above, or wherein two pairs of R^1 substituents of the same cyclopentadienyl group form two rings having from 4 to 6 carbon atoms; wherein R^2 is a bridging group which links the two cyclopentadienyl rings and is selected from the group consisting of CR^3_2, $C_2R^3_4$, SiR^3_2, $Si_2R^3_4$, GeR^3_2, $Ge_2R^3_4$, $R^3_2SiCR^3_2$, NR^1 and PR^1 wherein the R^3 substituents, which are the same or different from each other, are selected from the group consisting of R^1 and hydrogen, or wherein one pair of the R^3 substituents forms a ring having from 3 to 6 carbon atoms, or two pairs of the R^3 substituents form two rings having from 3 to 6 carbon atoms; the Q substituents, which are the same or different from each other, are selected from the group consisting of hydrogen, halogen, OH, SH, R^1, OR^1, SR^1, NR^1_2 and PR^1_2; m is 0 or 1; n is 0 or 1, n being 1 when m=1; x is an integer of from m+1 to 5; and y is an integer of from m to 5:

(B) an organometallic aluminium compound of the formula (II):

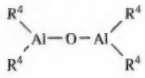
$$AlR^4_{3-z}H_z \quad (II)$$

wherein the R^4 substituents, which are the same or different from each other, are selected from the group consisting of alkyl, alkenyl and alkylaryl radicals containing from 1 to 10 carbon atoms, said radicals optionally containing Si or Ge atoms, with the proviso that at least one of the R^4 substituents is different from a straight alkyl group; z is 0 or 1; and

(C) water:

the molar ratio of the organometallic aluminium compound to the water being from 1:1 to 100:1, with the proviso that contacting the organometallic aluminium compound with the water results in an aluminium reaction product in which at least a part of said aluminium reaction product is in a form different from an alumoxane compound of formula (III):

(III)



wherein the R^4 substituents, which are the same or different from each other, are as defined above.

5,910,465

PROCESS FOR THE PREPARATION OF A HIGHLY ACTIVE AND SELECTIVE AMMOXIDATION CATALYST AND ITS USE IN PREPARING HETEROAROMATIC NITRILES

Panja Kanta Rao; Kamaraju Seetha Rama Rao; Vattikonda Venkata Rao; Kalavaru Venkata Narayana; Akula Venugopal; Alla Venkata Rama Rao, and Machiraju Subrahmanyam, all of Hyderabad, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Mar. 12, 1996, Appl. No. 615,855

Int. Cl.[6] **B01J** *27/198;27/192;27/182*

U.S. Cl. 502—209 **9 Claims**

1. A process for the preparation of highly active and selective ammoxidation catalyst of formula $(VO)_2P_2O_7$, TiO_2 or $(VO)_2P_2O_7$, Al_2O_3, which process comprises:

i. refluxing a vanadium salt or a vanadium oxide in the presence of an aliphatic or aromatic alcohol or a mixture thereof;

ii. adding a acid to form vanadyl pyrophosphate hydrate $(VO)_2H_4P_2O_9$ or $(VO)_2P_2O_7.2H_2O$;

iii. mixing $(VO)_2H_4P_2O_9$ with oxides selected from titanium or aluminum, and

iv. heating the resultant mixture in the presence of air at a tempera-ture of 300–600 ° C. for a period of 1 to 10 hours.

5,910,466

CATALYST FOR PURIFYING EXHAUST GAS

Koichi Yamashita, Susono, and Mikio Murachi, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 18, 1997, Appl. No. 993,013

Claims priority, application Japan, Dec. 25, 1996, 8-346189

Int. Cl.[6] **C01B** *17/16;* **C01G** *45/02;49/02;* **B01J** *23/58*

U.S. Cl. 502—300 **8 Claims**

1. A sulphur oxide resistant catalyst for purifying an exhaust gas, comprising:

(i) a complex oxide containing at least one noble metal selected from the group of complex oxides having the formulas: X_4PmO_6, wherein X is Ca, Sr, Ba or Mg; $X'_2Pm_2O_7$, wherein X' is Sc, La or Pr; $Sr_3X''PmO_6$, wherein X" is Co, Ni or Cu; Ba_2ZPmO_6, wherein Z is Pr or Ce and $Ba_8Y_3Pm_4O_{17.5}$), wherein Pm is Pt, Rh or Pd and from 1.0–10% by weight of at least one element selected from the group consisting of iron, cobalt and nickel, based on the total weight of noble metal containing complex oxide, supported on (ii) a catalyst support of the combination of (a) an alkaline earth metal element or a lanthanoid element and (b) an oxide selected from the group consisting of alumina, silica, titania, zirconia and ceria.

5,910,467

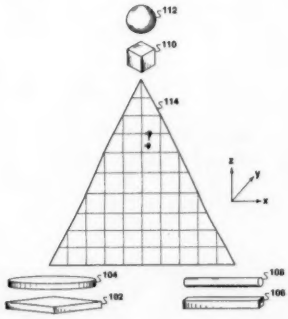
SOLIDS-STABILIZED EMULSION

James R. Bragg, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Division of application No. 09/062,167, Apr. 17, 1998, which is a continuation-in-part of application No. 08/885,507, Jun. 30, 1997, Provisional application No. 60/047,620, May 23, 1997. This application Sep. 22, 1998, Appl. No. 158,162.

Int. Cl.[6] **C09K** *3/00;7/00*

U.S. Cl. 507—202 **15 Claims**



1. A solids-stabilized emulsion for use in recovering hydrocarbons from a subterranean formation, said emulsion comprising:

(a) a first liquid;

(b) droplets of a second liquid suspended in said first liquid;

(c) solid particles which are insoluble in both said first liquid and said second liquid at the conditions of said subterranean formation; and

(d) a sufficient amount of a gas to reduce the viscosity of said solids-stabilized emulsion to less than about ten times the viscosity of said hydrocarbons.

5,910,468

PROCESS FOR THE PREPARATION OF CALCIUM PHENATE DETERGENTS FROM CASHEW NUT SHELL LIQUID

Khem Chand Dohhen; Harish Chander Bhatia; Krishan Kumar Swami; Rakesh Sarin; Deepak Kumar Tuli; Madan Mohan Rai, and Akhilesh Kumar Bhatnagar, all of Faridabad, India, assignors to Indian Oil Corporation Ltd., Bombay, India

Filed Apr. 6, 1998, Appl. No. 55,213

Int. Cl.[6] **C10M** *159/22*

U.S. Cl. 508—332 **10 Claims**

1. An overbased calcium salt of sulphurised distilled cahew nut shell liquid.

5,910,469

CRUDE OIL COMPOSITION COMPRISING AN ALKYLPHOSPHONATE ANTIFOULING ADDITIVE

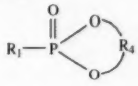
William S. Carey, Ridley Park; Jeffrey H. Peltier, King of Prussia, both of Pa., and Alan E. Goliaszewski, The Woodlands, Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Division of application No. 08/489,905, Jun. 12, 1995, Pat. No. 5,614,081. This application Nov. 1, 1996, Appl. No. 742,726.

Int. Cl.[6] C10M *137/12*

U.S. Cl. 508—422 3 Claims

1. A composition comprising a crude oil and an alkylphosphonate ester having the formula:



wherein R_1 is a C_1 to C_{40} alkyl or alkenyl radical and R_4 is a substituted or non-substituted alkyl or alkenyl radical having 1 to 40 carbon atoms.

5,910,470

GREASE TO BE SEALED IN BEARING

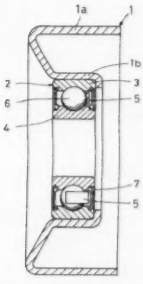
Masami Minami, Kuwana; Takao Yoshimatsu; Hiroki Iwamatsu, both of Kobe, and Takahiro Koremoto, Iwata, all of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Jan. 29, 1997, Appl. No. 790,651

Claims priority, application Japan, Jan. 30, 1996, 8-014299

Int. Cl.[6] C10M *145/22*

U.S. Cl. 508—468 8 Claims



1. A grease to be sealed in a bearing comprising a base oil and 5–20 weight % of an urea thickening agent, said base oil comprising a synthetic hydrocarbon oil and an ester synthetic oil in a weight ratio of 0.65–0.75:0.35–0.25, respectively, said ester synthetic oil comprising oil chain molecules, said oil chain molecule comprising a carbon atom chain of at least eight carbon atoms having bonded thereto at least eight ester groups arranged on only one side of said carbon atom chain.

5,910,471

ABRASIVE ARTICLE FOR PROVIDING A CLEAR SURFACE FINISH ON GLASS

Todd J. Christianson, Oakdale; David D. Nguyen, Shakopee, and Robert G. Visser, Afton, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 7, 1997, Appl. No. 813,878

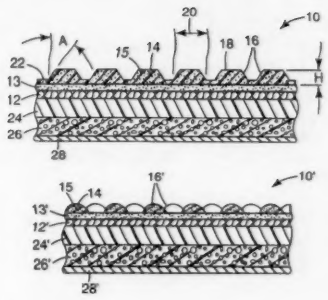
Int. Cl.[6] B24D *11/00*

U.S. Cl. 51—295 21 Claims

1. An abrasive article comprising:

a backing; and

at least one three-dimensional abrasive coating comprising diamond particles dispersed within a binder bonded to a surface of the backing, the binder comprising a cured binder precursor including a urethane acrylate oligomer; wherein the abrasive



article is capable of reducing an initial Ra of about 1.2 μm or greater on a glass test blank to a final Ra of about 0.7 μm or less using an RPP procedure having a polish time interval of about 25 seconds.

5,910,472

CLEANSING COMPOSITIONS

Russell Phillip Elliott, Egham; Matthew Thomas Green, Teddington; Christopher David Leahy, Kew, and Eleni Papadimitriou, Putney, all of United Kingdom, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/15538, § 371 Date Jun. 2, 1997, § 102(e) Date Jun. 2, 1997, PCT Pub. No. WO96/17917, PCT Pub. Date Jun. 13, 1996

PCT Filed Nov. 30, 1995, Appl. No. 849,258

Claims priority, application United Kingdom, Dec. 3, 1994, 94 24476; Dec. 5, 1994, 94 24509

This patent is subject to a terminal disclaimer.

Int. Cl.[6] C11D *1/88;1/94;3/20*

U.S. Cl. 510—124 17 Claims

1. A liquid personal cleansing composition comprising:

A.) a rheology regulating composition, comprising:

a.) from about 5% to about 60% by weight of water-soluble surfactant selected from anionic, nonionic, zwitterionic and amphoteric surfactants and mixtures thereof;

b.) from about 0.01% to about 10% by weight of a hydrophobically modified nonionic cellulose ether selected from C_{14}–C_{18} alkyl and alkenyl modified, hydroxyethyl cellulose ethers having a degree of nonionic substitution in the range of from about 2.2 to about 2.8 and a degree of hydrophobic substitution in the range of from about 0.4% to about 0.6% by weight; and

c.) from about 0.01% to about 5% by weight of a cationic polymeric skin conditioning agent selected from the group consisting of cationic guar gums, homopolymers of dimethyldiallylammonium chloride. copolymers of dimethyl aminoethylmethacrylate and acrylamide, copolmers of dimethyldiallylammonium chloride and acrylamide, acrylic acid/dimethyldiallylammonium chloride/acrylamide terpolymers quaternized vinyl pyrrolidone acrylate or methacrylate copolymers of amino alcohol, vinyl pyrrolidone/vinyl imidazolium methochloride copolymers, polyalkyleneimines and mixtures thereof: and

B.) water

and wherein the composition displays a shear stress of about 150 Pa at a shear rate in the range form about 400 s^{-1} to about 600 s^{-1} at 25° C.

5,910,473

COLORED ACIDIC AQUEOUS LIQUID COMPOSITIONS COMPRISING A PEROXY-BLEACH

Stefano Alfano; Giulia Ottavia Bianchetti; Franca Fabri, all of Rome, and Luigi Pace, Sorrento, all of Italy, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US96/05335, § 371 Date Mar. 23, 1998, § 102(e) Date Mar. 23, 1998, PCT Pub. No. WO96/83877, PCT Pub. Date Dec. 5, 1996

PCT Filed Apr. 19, 1996, Appl. No. 973,319

Claims priority, application European Pat. Off., May 31, 1995, 95870064

Int. Cl.[6] C11D *3/39;3/395;* C01B *15/055;15/08*

U.S. Cl. 510—191 14 Claims

1. A colored acidic thickened aqueous composition having a viscosity of from 150 cps and up at 20° C., when measured with a Carri-med rheometer at 50 dyne/cm2, said aqueous composition comprising a source of peroxygen and from 0.005% to 0.02% by weight of the total composition of an α or β metal phthalocyanine dye, or mixtures thereof; wherein said aqueous composition further comprises a thickening surfactant system comprising (a) a quaternary ammonium compound wherein one or two of the hydrocarbon groups linked to nitrogen are a linear or branched alkyl group of about 6 to about 30 carbon atoms, saturated or unsaturated, and wherein the other hydrocarbon groups lined to the nitrogen are independently substituted or unsubstituted, linear or branched alkyl chain of from 1 to about 4 carbon atoms, and wherein the counterion used in said quaternary ammonium compound is selected from the group of fluoride, or methyl sulfate, or methylsulfonate or hydroxide, or mixtures thereof, and (b) an amine oxide having the following formula $R_1R_2R_3NO$ wherein R_2 and R_3 are independently C1–C4 alkyl groups, and wherein R_1 is C6 to C10 alkyl group, or mixtures thereof; and wherein the weight ratio of said amine oxide to said quaternary ammonium compound is from about 1:2 to about 1:100, and wherein the total level of said thickening surfactant system is no more than about 20% by weight.

5,910,474

METHOD OF RINSING SHOWERS CLEAN

Robert H. Black, 4858 Mariner Point, Jacksonville, Fla. 32225

PCT No. PCT/US96/00906, § 371 Date Jul. 18, 1997, § 102(e) Date Jul. 18, 1997, PCT Pub. No. WO96/22346, PCT Pub. Date Jul. 25, 1996

Continuation-in-part of application No. 08/374,918, filed as application No. PCT/US96/00906, Jan. 18, 1996, which is a division of application No. 08/439,382, May 11, 1995, and a division of application No. 08/374,918. This PCT application Jan. 18, 1996, Appl. No. 875,267.

Int. Cl.[6] C11D *1/72;1/825;3/30*

U.S. Cl. 510—238 23 Claims

1. A method of rinsing showers clean without scrubbing or wiping, consisting essentially of repeated cycles of the steps of:

wetting surfaces of a shower;

spraying the wet shower surfaces after showering with an aqueous rinsing solution comprising:

about 0.5% to 3% by volume of a non-ionic surfactant having an HLB of 13 or less, wherein the non-ionic surfactant is the sole surfactant; and

about 0.1% to 3% by volume of a chelating agent, wherein said aqueous rinsing solution has a pH in a range of about 4 to 6, whereby deposits resulting from showering are removed, without scrubbing or wiping by allowing said aqueous rinsing solution to transport said deposits down the shower surfaces to a drain, said shower surfaces air-drying spot-free and without streaking.

5,910,475

CLEANING COMPOSITIONS FOR CERAMIC AND PORCELAIN SURFACES AND RELATED METHODS

Phillip J. Neumiller, and Wayne M. Rees, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Division of application No. 08/995,326, Dec. 22, 1997. This application Dec. 18, 1998, Appl. No. 215,552.

Int. Cl.[6] C11D *10/02;3/20;3/33*

U.S. Cl. 510—238 7 Claims

1. A cleaning composition for removing at least kinetically inert metal coordination complex stains from a surface, said composition comprising, in combination:

sodium bisulfate, in an amount between about 10 and about 80 weight percent of the composition;

isoascorbic acid, in an amount between about 0.1 and about 20 weight percent of the composition, for reducing the kinetically inert metal coordination complex stains;

a non-interfering surfactant system; and

a complexing system comprising ethylenediaminetetraacetic acid and citric acid, said ethylenediaminetetraacetic acid comprising between about 0.01 and about 10 weight percent of the composition, and said citric acid comprising between about 5 and about 45 weight percent of the composition.

5,910,476

ABRASIVE-CONTAINING SOAP BARS

Donald V. Kinsman, Ft. Thomas, Ky.; Timothy J. Cassady, Hamilton, and J. Matthew White, Morrow, both of Ohio, assignors to Henkel Corporation, Gulph Mills, Pa.

Provisional application No. 60/021,039, Jul. 2, 1996. This application Jun. 3, 1997, Appl. No. 868,462.

Int. Cl.[6] C11D *9/32;7/02;7/08;17/00*

U.S. Cl. 510—447 10 Claims

1. A soap bar comprised of from about 30% to about 55% by weight of a fatty acid soap, from about 0.5% to about 20% by weight of a fatty acid ester of an isethionate salt, from about 0.5% to about 10% by weight of a nonionic sugar surfactant selected from the group consisting of an alkyl glucose ester, an aldobionamide, a gluconamide, a glyceramide, a glyceroglycolipid, a polyhydroxy fatty acid amide, an alkyl polyglycosice, and combinations thereof, from about 10% to about 30% by weight of an abrasive and, from about 15% to about 50% by weight of water.

5,910,477

VISCOUS CLEANING COMPOSITIONS WITH IMPROVED FOAM COLLAPSE

Neil James Gordon, Strombeek-Bever, Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/05839, § 371 Date Feb. 24, 1997, § 102(e) Date Feb. 24, 1997, PCT Pub. No. WO95/33024, PCT Pub. Date Dec. 7, 1995

PCT Filed May 10, 1995, Appl. No. 750,190

Claims priority, application European Pat. Off., May 31, 1994, 94870090

Int. Cl.[6] C11D *1/12;1/75;3/30*

U.S. Cl. 510—503 19 Claims

1. An aqueous viscous composition comprising:

(a) from 0.5% to 1.2% of an ingredient comprising an amine, amine oxide or a mixture thereof;

(b) between 4% and 7% of an ingredient comprising a secondary alkyl sulfate, secondary alkyl sulfonate, primary monobranched alkyl sulfate, primary monobranched alkyl sulfonate or mixture thereof;

(c) between 2% and 4% hydrotrope; and

(d) between 4% and 8% citric acid;

wherein the amount of component (b) is in excess of component (a), the composition has a pH of from 3 to 4 and wherein a 1.2%, by weight, aqueous solution of the composition has an average rate of foam collapse of from 1.00 to 1.50 cm/min.

5,910,478

PEPTIDOMIMETICS INHIBITING THE ONCOGENIC ACTION OF P21 RAS

Joseph J. Hlavka, Tuxedo Park; John Fowler Noble, Pomona, both of N.Y.; Henry Baxter Abajian, Hillsdale, N.J.; Andrew S. Kende, Pittsford, and Matthew R. Pincus, Brooklyn, both of N.Y., assignors to Innapharma, Inc., Upper Saddle River, N.J.

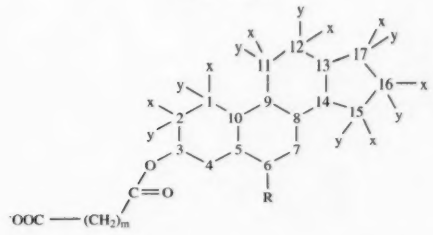
Provisional application No. 60/004,091, Sep. 21, 1995. This application Sep. 20, 1996, Appl. No. 718,270.

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—9 **8 Claims**

1. A peptidomimetic of the structure

STRUCTURE I



wherein the sidechain R attached at the carbon atom numbered 6 on the sterol nucleus can be $NH—CH_2—CH_2NH_3^+$ alkyl amino, arylamino, or aralkylamino group, and wherein the sidechain attached at the carbon number 3 can be replaced with $—O—C(=O)—(CH_2)_m—COOH$, where m is an integer from 1 to 6, inclusive, and one of x and y at each position independently, can be one H, a small alkyl group of C_1 to C_3; a halogen, or an amino group where the other of one of x and y is H.

5,910,479

METHOD FOR THE TREATMENT OF *STREPTOCOCCUS PNEUMONIAE* INFECTION

Beth P. Goldstein, Tarrytown, N.Y., assignor to AMBI Inc., Tarrytown, N.Y.

Provisional application No. 60/028,812, Oct. 18, 1996. This application Dec. 20, 1996, Appl. No. 771,244.

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—9 **6 Claims**

1. A method for preventing or treating infection by antibiotic-resistant or multidrug-resistant pathogenic bacterial strains of *Streptococcus pneumoniae*, which comprises administering to a mammal in need of such treatment an effective amount of a lanthocin antimicrobial in excess of its minimal inhibitory concentration wherein the lanthocin is selected from the group consisting of nisin, subtilin, epidermin, gallidermin and pep 5.

5,910,480

PROTEIN CALLED EPIL/PLACENTIN, PROCESS FOR THE PREPARATION OF THIS PROTEIN AND PHARMACEUTICAL COMPOSITION CONTAINING SUCH, DNA CODING FOR SAID PROTEIN

Ahmet Koman, 5 Grand Rue, 78240, Chambourcy; Dorine Chassin, 126 de la Boulevard Liberation, 94300, Vincennes, and Dominique Bellet, 18 Rue Diderot, 92170, Vanves, all of France

Filed Jun. 7, 1995, Appl. No. 482,842

Claims priority, application France, Jun. 13, 1994, 94 07191

Int. Cl.[6] A61K *37/00;* **C07K** *14/00*

U.S. Cl. 514—12 **13 Claims**

1. EPIL/Placentin, protein with a formula corresponding to sequence ID 1, and its analogs showing EPIL/placentin-type action, obtained by deletion and/or substitution.

5,910,481

HYBRID PROTEINS WITH MODIFIED ACTIVITY

Johannes J. Voorberg, Assendelft, Netherlands, assignor to Immuno AG, Vienna, Australia

Filed Nov. 13, 1995, Appl. No. 558,107

Int. Cl.[6] A61K *38/00;35/14;* **C12P** *21/04;21/06*

U.S. Cl. 514—12 **15 Claims**

1. A hybrid protein derived from a Factor VIII protein, wherein (i) the hybrid protein comprises an acidic region from a donor anticoagulant protein or a donor antithrombotic protein, and (ii) the acidic region replaces a region in the Factor VIII protein, wherein the replaced Factor VIII region is selected from the group of regions defined by native amino acid residues 336 and 372, amino acid residues 705 and 740 and amino acid residues 1648 and 1689.

5,910,482

TREATMENT OR PREVENTION OF PREECLAMPSIA, ECLAMPSIA WITH CALCITONIN GENE RELATED PEPTIDE, CGRP ANALOG, PROGESTATIONAL AGENT, NITRIC OXIDE SOURCE, AND CYCLOOXYGENASE INHIBITOR

Chandrasekhar Yallampalli, Houston, and Sunil J. Wimalawansa, Friendswood, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Mar. 19, 1996, Appl. No. 619,841

Int. Cl.[6] A61K *31/04*

U.S. Cl. 514—12 **32 Claims**

1. A method of treating preeclampsia and eclampsia of pregnancy in a pregnant female mammal comprising administering to the afflicted female a therapeutically effective amount of CGRP (calcitonin gene related peptide) in the presence of progesterone.

5,910,483

PLEROCERCOID GROWTH FACTOR PROTEIN PURIFIED FROM *SPIROMETRA MANSONOIDES*

Cleveland Kirk Phares, Omaha, Nebr., assignor to The Board of Regents of The University of Nebraska, Lincoln, Nebr.

Division of application No. 08/546,712, Oct. 23, 1995, Pat. No. 5,693,498, and a continuation-in-part of application No. 07/803,682, Dec. 3, 1991, abandoned. This application Nov. 15, 1996, Appl. No. 751,105.

Int. Cl.[6] A61K *38/18;* **C07K** *14/435;* **C12N** *15/18*

U.S. Cl. 514—12 **6 Claims**

1. Purified plerocercoid growth factor having a specific activity of at least 92,000 ngE/mg as compared to human growth hormone standard, wherein said plerocercoid growth factor comprises the amino acid sequence of SEQ ID NO:2.

5,910,484

TREATMENT OF ISCHEMIC CARDIAC MALFUNCTION

Garner T. Haupert, Jr., Littleton, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Filed May 30, 1997, Appl. No. 866,712
Int. Cl.[6] A61K *31/70*
U.S. Cl. 514—25 3 Claims

1. A method for increasing coronary perfusion in a mammalian host comprising administering to the host in need thereof an effective amount of a glycosidic hypothalamic inhibitory factor wherein said factor has been purified to homogeneity.

5,910,485

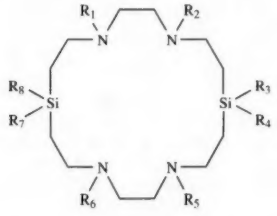
ANTITUMOR AGENTS COMPRISING AS THE PRINCIPAL COMPOUNDS CONTAINING SILICON AND NITROGEN

Masao Kato, Tsukuba; Kazunori Kataoka, Kashiwa; Yukio Nagasaki, Ibaraki, and Tsutomu Takezawa, Koshigaya, all of Japan, assignors to Japan Science and Technology Corporation, Kawaguchi, Japan

PCT No. PCT/JP97/00200, § 371 Date Sep. 10, 1997, § 102(e) Date Sep. 10, 1997, PCT Pub. No. WO97/27859, PCT Pub. Date Aug. 7, 1997
PCT Filed Jan. 29, 1997, Appl. No. 913,219
Claims priority, application Japan, Jan. 31, 1996, 8-015484
Int. Cl.[6] A61K *31/70;31/695*
U.S. Cl. 514—34 9 Claims

1. A composition which comprises a mixture of a compound represented by the formula (A) and Adriamycin

(A)



wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7, and R_8 independently represent hydrogen atom, or alkyl group, allyl group, or aralkyl group of carbon number 1 to 10; and; at a mixing ratio of 0.01 to 500 parts by weight of said compound of formula (A) per 1 part by weight of Adriamycin.

5,910,486

METHODS FOR MODULATING PROTEIN FUNCTION IN CELLS USING, INTRACELLULAR ANTIBODY HOMOLOGUES

David T. Curiel, and Jessy Deshane, both of Birmingham, Ala., assignors to UAB Research Foundation, Birmingham, Ala.

Continuation of application No. 08/301,339, Sep. 6, 1994, abandoned. This application Jun. 6, 1995, Appl. No. 468,252.
Int. Cl.[6] A61K *48/00*
U.S. Cl. 514—44 20 Claims

1. A method for killing a cell expressing a protein that stimulates proliferation of said cell, comprising the steps of introducing into said cell a nucleic acid molecule encoding an antibody homologue, wherein said antibody homologue is expressed intracellularly and binds to said protein intracellularly, to thereby kill said cell, wherein said cell is a malignant mammalian cell, wherein said protein is an oncoprotein, wherein said oncoprotein is normally expressed in mature form on the cell surface, wherein said oncoprotein is erbB-2.

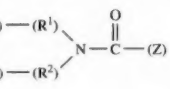
5,910,487

CATIONIC AMPHIPHILES AND PLASMIDS FOR INTRACELLULAR DELIVERY OF THERAPEUTIC MOLECULES

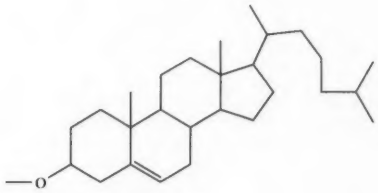
Nelson S. Yew, West Upton; Seng H. Cheng, Wellesley; Simon J. Eastman, Marlboro; John Marshall, Milford; Ronald K. Scheule, Hopkinton; David J. Harris, Lexington; Edward R. Lee, Quincy, and Craig S. Siegel, Woburn, all of Mass., assignors to Genzyme Corporation, Boston, Mass.

Continuation-in-part of application No. 08/540,867, Oct. 11, 1995, Pat. No. 5,747,471, which is a continuation-in-part of application No. 08/352,479, Dec. 9, 1994, Pat. No. 5,650,096, Provisional application No. 60/004,344, Sep. 26, 1995, Provisional application No. 60/004,399, Sep. 27, 1995. This application Oct. 20, 1995, Appl. No. 546,205.
Int. Cl.[6] A61K *37/00*
U.S. Cl. 514—44 7 Claims

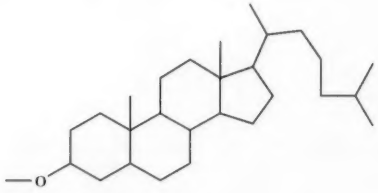
1. A composition comprising:
1) a cationic amphiphile:



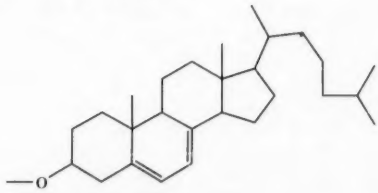
wherein:
Z is a steroid selected from the group



linked by the 3-O group thereof,

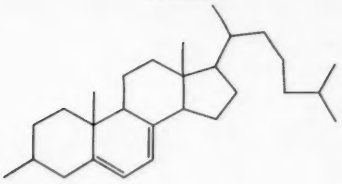


linked by the 3-O group thereof,

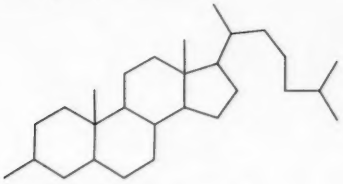


linked by the 3-O group thereof,

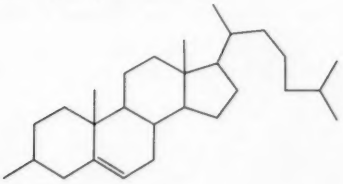
-continued



linked by the 3 position thereof,



linked by the 3 position thereof, and



linked by the 3 position thereof,

R^3 is H, or a saturated or unsaturated aliphatic group,

R^1 is an alkylamine, or a polyalkylamine,

R^4 is H, or a saturated or unsaturated aliphatic group,

R^2 is an alkylamine, or a polyalkylamine,

wherein R^1 and R^2 are the same or different; and

2) a plasmid that can be replicated in the nucleus of a human cell.

5,910,488

PLASMIDS SUITABLE FOR GENE THERAPY

Gary J. Nabel; Elizabeth G. Nabel, both of Ann Arbor, Mich.; Denise Lew, Encinitas, and Magda Marquet, La Jolla, both of Calif., assignors to Vical Incorporated, San Diego, Calif.

PCT No. PCT/US94/06069, § 371 Date Dec. 1, 1995, § 102(e) Date Dec. 1, 1995, PCT Pub. No. WO94/29469, PCT Pub. Date Dec. 22, 1994

Continuation-in-part of application No. 08/074,344, Jun. 7, 1993, abandoned. This PCT application May 27, 1994, Appl. No. 564,313.

Int. Cl.[6] **A61K** *48/00;* **C12N** *15/63;15/79;15/09*

U.S. Cl. 514—44 **22 Claims**

1. A polycistronic plasmid comprising a first cistron encoding a MHC class I chain and a second cistron encoding a β-2 microglobulin chain.

14. A pharmaceutical composition comprising a therapeutically effective amount of the plasmid of claim **1** or **12**, and a pharmaceutically acceptable carrier.

19. A method of suppressing solid tumor growth in a mammal comprising administering to said mammal the pharmaceutical composition of claim **14** at or around the site of a solid tumor wherein said solid tumor is suppressed growth.

5,910,489

TOPICAL COMPOSITION CONTAINING HYALURONIC ACID AND NSAIDS

Rudolf Edgar Falk, and Samuel Simon Asculai, both of Toronto, Canada, assignors to Hyal Pharmaceutical Corporation, Mississauga, Canada

PCT No. PCT/CA93/00062, § 371 Date Aug. 19, 1994, § 102(e) Date Aug. 19, 1994, PCT Pub. No. WO93/16733, PCT Pub. Date Sep. 2, 1993

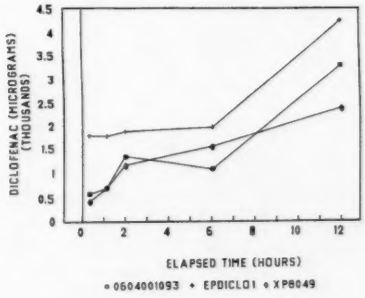
Continuation-in-part of application No. 07/838,675, Feb. 21, 1992, Pat. No. 5,639,738, which is a continuation-in-part of application No. 07/675,908, Jul. 3, 1991, which is a continuation-in-part of application No. PCT/CA90/00306, Sep. 18, 1990. This PCT application Feb. 16, 1993, Appl. No. 290,848.

Claims priority, application Canada, Feb. 20, 1992, 2061566

This patent is subject to a terminal disclaimer.

Int. Cl.[6] **A61K** *31/715;47/36*

U.S. Cl. 514—54 **12 Claims**



1. A method of treating a disease or condition selected from the group consisting of liver spots, malignancies of the skin, genital warts (condyloma acuminata), cervical cancer, Psoriasis, corns on the feet, and hair loss on the head of pregnant women, said method comprising administering topically to the skin or exposed tissue of a human, a dosage amount of a pharmaceutical composition, said dosage amount consisting essentially of:

(1) an agent selected from a medicinal and therapeutic agent in a therapeutically effective amount to treat the disease or condition of the skin or exposed tissue and;

(2) a form of hyaluronic acid selected from hyaluronic acid and salts thereof characterized in that said dosage amount of said composition is in a dosage form suitable for topical application to the skin or exposed tissue and in a dosage amount in which component (2) exceeds 5 mg/cm^2 of the skin or exposed tissue to which the dosage amount is to be applied, and is in such form that component (2) is immediately available to transport component (1) percutaneously into the epidermis of the skin or exposed tissue to the site of trauma or pathology of the disease or condition to be treated and wherein the form of hyaluronic acid has a molecular weight less than 750,000 daltons and greater than 150,000 daltons, said administrations continuing until such time as no longer required and wherein component (2) is between about 1% and about 3% by weight of the composition and wherein component (1) is between 1% and about 5% by weight of the composition.

5,910,490

USE OF OLIGOSACCHARIDES IN THE PREVENTION AND TREATMENT OF THE AGING OF TISSUES

Elemer Moczar, Gif-sur-Yvette; Ladislas Robert, and Alexandre Robert, both of Santeny, all of France, assignors to ROC, S.A., Colombes, France

PCT No. PCT/FR94/01008, § 371 Date Feb. 16, 1996, § 102(e) Date Feb. 16, 1996, PCT Pub. No. WO95/05155, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 16, 1994, Appl. No. 592,317

Claims priority, application France, Aug. 17, 1993, 93 10054

Int. Cl.[6] ***A61K*** *31/715;31/70;7/40*

U.S. Cl. 514—54 28 Claims

1. *A method for treatment or for slowing the aging of connective tissue comprising:*

administering to a subject in need thereof at least one oligosaccharide containing 2 to 5 osidic residues or a derivative thereof comprising a hydrophobic residue, the oligosaccharide or derivative thereof containing a galactose residue in a non-reducing terminal position.

5,910,491

HIGHLY LIPOPHILIC CAMPTOTHECIN DERIVATIVES

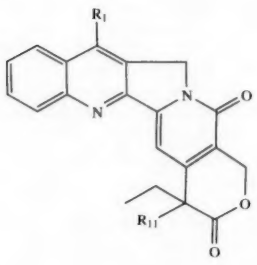
Frederick H. Hausheer, Boerne; Pavankumar N.V. Petluru, San Antonio; Dasharatha Reddy, San Antonio; Dhanabalan Murali, San Antonio; Kochat Haridas, San Antonio; Peddaiahgari Seetharamulu, San Antonio, and Shijie Yao, San Antonio, all of Tex., assignors to BioNumerik Pharmaceuticals, Inc., San Antonio, Tex.

Provisional application No. 60/024,171, Aug. 19, 1996. This application Aug. 19, 1997, Appl. No. 914,207.

Int. Cl.[6] C07D *491/22*

U.S. Cl. 514—63 14 Claims

1. A compound having the formula:



(I)

wherein R_1 is (C_0–C_6 alkylene, C_2–C_8 alkenylene, or C_2–C_8 alkynylene)—$SiR_8R_9R_{10}$; or —X—(C_1–C_6 alkylene, C_2–C_8 alkenylene, or C_2–C_8 alkynylene)—$SiR_8R_9R_{10}$;

R_8, R_9 and R_{10} are each individually hydrogen or lower alkyl;

R_{11} is hydrogen, hydroxy, acyloxy or alkoxy; and

X is sulfur.

5,910,492

OSTEOGENIC PROMOTING PHARMACEUTICAL COMPOSITION

Tetsuo Hoshino, Osaka; Hiroya Muranishi, Kyoto; Shigehisa Taketomi, Osaka, and Susumu Iwasa, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 25, 1996, Appl. No. 719,467

Claims priority, application Japan, Jun. 5, 1995, 7-138036; Jan. 26, 1996, 8-011686; WIPO, Jun. 4, 1996, PCTJP9601506

Int. Cl.[6] A61K *31/67;31/66*

U.S. Cl. 514—114 16 Claims

1. A sustained-release pharmaceutical composition comprising a sustained-release microcapsule having a release time of from 1 *week to 3 months comprising a composition comprising* (2R,4S)-(−)-N-[4-(diethoxyphosphorylmethyl) phenyl]-1,2,4,5-tetrahydro-4-methyl-7,8-methylenedioxy-5 -oxo-3-benzothiepine-2-carboxamide *and a biodegradable polymer.*

5,910,493

HORMONAL AGENT FOR SKIN TREATMENT

Siegfried Golbs, Leipzig; Michael Oettel, Jena; Michael Dittgen, Apolda; Thomas Graser, Erfurt, and Christoph Luderschmidt, Munchenl, all of Germany, assignors to Jenapharm GmbH, Jena, Germany

Filed Sep. 16, 1996, Appl. No. 714,463

Claims priority, application Germany, Sep. 16, 1995, 195 34 209

Int. Cl.[6] ***A61K*** *31/56*

U.S. Cl. 514—170 16 Claims

1. A method of treating skin with seborrhea, said method consisting of applying an effective amount of a pharmaceutical preparation to local areas of said skin containing said seborrhea, wherein said pharmaceutical preparation contains dienogest or a combination of dienogest and an estrogen as an active ingredient for treating said skin with said seborrhea, wherein said estrogen is *selected from the group consisting of* 17α-estradiol and estriol.

5,910,494

HYPOLIPIDEMIC 1,4-BENZOTHIAZEPINE-1,1-DIOXIDES

Lawrence Edward Brieaddy, Raleigh, N.C., assignor to Glaxo Wellcome Inc., Research Triangle Park, N.C.

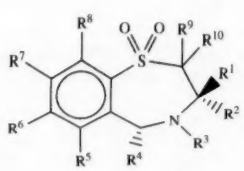
PCT No. PCT/GB95/01884, § 371 Date Feb. 7, 1997, § 102(e) Date Feb. 7, 1997, PCT Pub. No. WO96/05188, PCT Pub. Date Feb. 22, 1996

PCT Filed Aug. 9, 1995, Appl. No. 793,040

Int. Cl.[6] C07D *281/10;417/04;513/04;* A61K *31/55*

U.S. Cl. 514—211 28 Claims

1. The compounds of the formula (IVa)



(IVa)

wherein

R^1 is a straight chained C_{1-6} alkyl group;

R^2 is a straight chained C_{1-6} alkyl group;

R^3 is hydrogen or a group OR^{11} in which R^{11} is hydrogen, optionally substituted C_{1-6} alkyl or a C_{1-6} alkylcarbonyl group;

R^4 is un-substituted phenyl;

R^5 is hydrogen;

R^6 and R^8 are independently selected from hydrogen, C_{1-4} alkyl optionally substituted by fluorine, C_{1-4} alkoxy, halogen, or hydroxy;

R^7 is selected from OR^{15}, $S(O)_zR^{15}$, $OCOR^{15}$, OCF_3, OCN, SCN, CHO, OCH_2OR^{15}, $OCH{=}CHR^{15}$, $O(CH_2CH_2O)nR^{15}$, $O(CH_2)_pSO_3R^{15}$, $O(CH_2)_pNR^{12}R^{13}$ and $O(CH_2)_pN^+R^{12}R^{13}R^{14}$ wherein p is an integer from 1–4, n is an integer from 0–3, and R^{12}, R^{13}, R^{14}, and R^{15} are independently selected from hydrogen and optionally substituted C_{1-6} alkyl;

R^9 and R^{10} are the same or different and each is selected from hydrogen or C_{1-6} alkyl; and

salts, solvates and physiologically functional derivatives thereof.

5,910,495

USE OF 1,5-BENZO[B]1,4-DIAZEPINES TO CONTROL GASTRIC EMPTYING

Rochelle Marie Hanley, Chapel Hill, N.C., assignor to Glaxo Wellcome Inc., Research Triangle Park, N.C.

PCT No. PCT/US95/12830, § 371 Date Apr. 14, 1997, § 102(e) Date Apr. 14, 1997, PCT Pub. No. WO96/11691, PCT Pub. Date Apr. 25, 1996

PCT Filed Oct. 13, 1995, Appl. No. 817,727

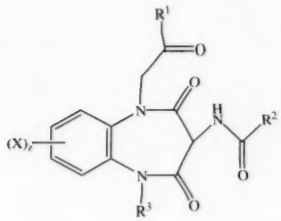
Claims priority, application United Kingdom, Oct. 14, 1994, 9420747

Int. Cl.[6] **A01N** *43/62*; **C07D** *243/12*

U.S. Cl. 514—221 **10 Claims**

1. A method of controlling gastric emptying in patients having an early non-insulin-dependent diabetic condition and exhibiting rapid gastric emptying comprising the administration of an effective gastric emptying controlling amount of a compound of Formula (I)

(I)

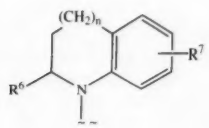


or a physiologically acceptable salt or solvate thereof wherein:

X is either hydrogen, trifluoromethyl, alkyl, C_{1-4}alkylthio, $-O(C_{1-4}$alkyl) or halogen;

R^1 is either Formula II or $-NR^4R^5$;

(II)



R^2 is either:

(1) a heterocycle linked at its 2- position and selected from pyrrole, tetrahydropyrrole, indole, benzofuran, thiophene, benzothiophene, indoline, quinoline or 4-oxobenzopyran and wherein said pyrrole, tetrahydropyrrole, indole or indoline may optionally be substituted on the ring nitrogen thereof by the group R^8 as defined hereunder and said indole, indoline, quinoline, benzofuran, benzothiophene or 4-oxo-benzopyran may optionally be substituted in the benzo ring thereof by the group R^9 as defined hereunder or

(2) phenyl or phenyl mono- or disubstituted independently with halogen, hydroxy, cyano, carboxy, $-O(C_{1-4}$alkyl), $-O(CH_2C_6H_5)$, $-COO(C_{1-4}$alkyl), amino, dimethylamino, $-NHR^{10}$, 1-pyrrolidinyl or tetrazolyl; or

(3) pyridine or pyridinyl mono- or disubstituted independently with halogen, methyl, hydroxy, nitro, cyano, carboxy, $-O(C_{1-4}$alkyl), $-O(CH_2C_6H_5)$, $-COO(C_{1-4}$alkyl), amino or dimethylamino; or

(4) $-NHR^{11}$ where R^{11} is defined hereinunder or R^{11} is 7-indazolyl containing a group R^{10} at the N–1 position;

R^3 is hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, phenyl or phenyl mono- or disubstituted independently with halogen;

R^4 is independently C_{3-6}alkyl, C_{3-6}cycloalkyl, C_{3-6}alkenyl, phenyl, $-(CH_2)_pCN$ or $-(CH_2)_pCOO(C_{1-4}alkyl)$ and R^5 is independently C_{3-6}alkyl, C_{3-6}cycloalkyl, C_{3-6} alkenyl, benzyl, phenyl or phenyl mono- or disubstituted independently with C_{1-3}alkyl, cyano, hydroxy, dimethylamino, $-O(C_{1-4}$alkyl), $-O(CH_2C_6H_5)$, $-NH(C_{1-4}$alkyl), $-COO(C_{1-4}$alkyl), $-N(C_{1-4}alkyl)_2$ pyrrolidino, morpholino or halogen or R^4 is C_{1-2}alkyl and R^5 is phenyl substituted at the 2- or 4-position with chloro, methyl, methoxy or methoxycarbonyl;

R^6 is hydrogen or methyl;

R^7 is hydrogen, hydroxy, fluoro, dimethylamino, $-O(C_{1-4}$alkyl) or $-O(CH_2C_6H_5)$;

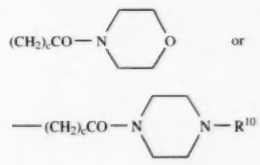
R^8 is $-(CH_2)_bCOOH$;

R^9 is methyl, chloro, nitro, hydroxy, methoxy or $-NHR^{10}$;

R^{10} is hydrogen, acetyl, C_{1-4}alkyl, $-SO_3H$, $-SO_2CH_3$, $-SO_2CF_3$ or $-SO_2C_6H_5$, C_{1-4}alkoxycarbonyl;

R^{11} is phenyl or phenyl mono- or disubstituted independently with fluorine, trifluoromethoxy, C_{1-4}alkylthio, $-(CH_2)_cCOOH$, $-(CH_2)_cCOO(C_{1-4}$alkyl), $-(CH_2)_cSCH_3$, $-(CH_2)_cSOCH_3$, $-(CH_2)_cSO_2CH_3$, $-(CH_2)_cCONH_2$, $-SCH_2COOH$, $-CONH(SO_2CH_3)$, $-CONH(SO_2CF_3)$, $-(CH_2)_cN(C_{1-4}alkyl)_2$, $-(CH_2)_cNH(SO_2CF_3)$, $-(CH_2)_cN(SO_2CF_3)(C_{1-4}$alkyl), $-(CH_2)_cSO_2NHCO(C_{1-4}$alkyl), $-(CH_2)_cSO_2N(C_{1-4}alkyl)CO(C_{1-4}$alkyl), $-(CH_2)_cCONHSO_2(C_{1-4}$alkyl), $-(CH_2)_cCON(C_{1-4}alkyl)SO_2(C_{1-4}$alkyl), $-(CH_2)_cOR^{12}$ $-(CH_2)CNHR^{10}$ or phenyl monosubstituted with $-(CH_2)_c$(tetrazolyl), $-(CH_2)_c$ (carboxamidotetrazolyl) or $-(CH_2)_c$(pyrrolidinyl) or R^{11} is selected from pyridine or pyridinyl mono- or disubstituted independently with halogen, methyl, hydroxy, nitro, cyano, carboxy, $-O(C_{1-4}$ alkyl), amino, dimethylamino, $-NHR^{10}$;

R^{12} is hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, $-CH_2C_6H_5$, $-CH_2COOH$, $-CH_2CONH_2$, $-CH_2CONH(C_{1-4}$alkyl), $-CH_2CON(C_{1-4}alkyl)_2$ or



z is 1 or 2;

n is 1 or 2;

p is an integer from 1–4;

b is an integer from 0–3; and

c is 0 or 1.

5,910,496

FUNGICIDAL COMPOSITIONS

Guido Albert, Hackenheim; Jürgen Curtze, Geisenheim-Johannisberg, and Edmund Friedrichs, Ingelheim am Rhein, all of Germany, assignors to American Cyanamid Company, Madison, N.J.

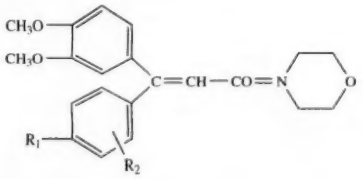
Continuation of application No. 08/118,243, Sep. 9, 1993, abandoned, which is a division of application No. 07/735,308, Jul. 24, 1991, Pat. No. 5,262,414, which is a continuation of application No. 07/505,583, Apr. 6, 1990, abandoned, which is a division of application No. 07/149,516, Jan. 28, 1988, Pat. No. 4,923,866, which is a continuation of application No. 06/913,136, Sep. 29, 1986, Pat. No. 4,753,934, which is a continuation of application No. 06/583,770, Feb. 27, 1984, abandoned. This application Jun. 7, 1995, Appl. No. 483,126.

Claims priority, application Germany, Jan. 30, 1987, 37 02 769

Int. Cl.[6] A61K *31/535*

U.S. Cl. 514—237.5 **16 Claims**

1. A fungicidal composition comprising at least one systemic, contact and/or soil fungicide and at least one acrylic acid morpholide derivative of the general formula



(I)

in which R_1 represents a hydrogen, chlorine or bromine atom, a trifluoromethyl, trifluoromethoxy C_3–C_7 alkyl, C_3–C_5 alkoxy, C_3–C_6 alkenyl, HClFC—CF_2O—, HClC=CClO—, cyclohexyl, cyclopentenyl, cyclohexenyl, phenyl, 4-chlorophenyl, 4-ethylphenyl, 4-chlorobenzyl or 4-chlorophenylthio group or a phenoxy group optionally substituted by one or more substituents selected from fluorine and chlorine atoms and methyl and ethoxycarbonyl groups and R_2 represents a hydrogen atom, or R_1 represents a hydrogen atom and R_2 represents a 3-phenoxy group.

5,910,497

16-PYRAZINYL-SUBSTITUTED-4-AZA-ANDROSTANE 5-α-REDUCTASE ISOZYME 1 INHIBITORS

Philippe L. Durette, New Providence; William K. Hagmann, Westfield; Thomas J. Lanza, Jr., Edison; Soumya P. Sahoo, Old Bridge; Gary H. Rasmusson, Watchung; Richard L. Tolman, Warren, and Derek Von Langen, Fanwood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

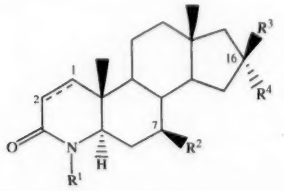
Continuation of application No. 08/601,042, filed as application No. PCT/US94/1219941021, Oct. 21, 1994, Pat. No. 5,739,137, which is a continuation-in-part of application No. 08/141,153, Oct. 21, 1993, abandoned. This application Dec. 16, 1997, Appl. No. 991,456.

Int. Cl.[6] A61K *31/50*

U.S. Cl. 514—253 **7 Claims**

1. A compound of the Formula I

I



or a pharmaceutically acceptable salt thereof wherein:

the C1–C2 carbon—carbon bond may be a single bond, or a double bond as indicated by the dashed line;

R^1 is selected from the group consisting of hydrogen and C_{1-10} alkyl;

R^2 is selected from the group consisting of hydrogen and C_{1-10} alkyl;

one of R^3 and R^4 is selected from the group consisting of hydrogen and methyl, and the other is selected from the group consisting of:

heteroaryl—X—;

wherein the heteroaryl is unsubstituted or substituted with one to three of:

v) halo; hydroxy; cyano; nitro; mono-, di- or trihalomethyl; mono-, di- or trihalomethoxy; C_{2-6} alkenyl; C_{3-6} cycloalkyl; formyl; hydrosulfonyl; carboxy; ureido;

vi) C_{1-6} alkyl; hydroxy C_{1-6} alkyl; C_{1-6} alkyloxy; C_{1-6} alkyloxy C_{1-6}alkyl; C_{1-6} alkylcarbonyl; C_{1-6} alkylsulfonyl; C_{1-6} alkylthio; C_{1-6} alkylsulfinyl; C_{1-6} alkylsulfonamido; C_{1-6} alkylarylsulfonamido; C_{1-6} alkyloxycarbonyl; C_{1-6} alkyloxycarbonyl C_{1-6}alkyl; R_bR_cN—C(O)—C_{1-6}alkyl; C_{1-6} alkanoylamino C_{1-6} alkyl; aroylamino C_{1-6} alkyl; wherein the C_{1-6} alkyl moiety is unsubstituted or substituted with 1–3 of: halo; C_{1-4} alkoxy; or trifluoromethyl;

vii) aryl; aryloxy; arylcarbonyl; arylthio; arylsulfonyl; arylsulfinyl; arylsulfonamido; aryloxycarbonyl; wherein the aryl moiety is unsubstituted or substituted with 1–3 of: halo; C_{1-4}alkyl; C_{1-4}alkoxy; or trifluoromethyl;

viii) —C(O)NR_bR_c; —O—C(O)—NR_bR_c; —N(R_b)—C(O)—R_c; —NR_bR_c; R_b—C(O)—N(R_c)—; where R_b and R_c are defined in (f) above; and —N(R_b)—C(O)—OR_g, wherein R_g is C_{1-6}alkyl or aryl, in which the alkyl moiety is unsubstituted or substituted with 1–3 of: halo; C_{1-4}alkoxy; or trifluoromethyl, and the aryl moiety is unsubstituted or substituted with 1–3 of: halo; C_{1-4} alkyl; C_{1-4} alkoxy, or trifluoromethyl; —N(R_b)—C(O) NR_cR_d, wherein R_d is selected from H, C_{1-6} alkyl, and aryl; in which said C_{1-6} alkyl and aryl is unsubstituted or substituted as described above in (f) for R_b and R_c;

and wherein:

X is selected from the group consisting of:

—O—; and —$S(O)_n$—; and n is zero, 1 or 2;

aryl is independently selected at each occurrence from phenyl and naphthyl, and

heteroaryl is pyrazinyl.

5,910,498

PYRIDONECARBOXYLIC ACID DERIVATIVES OR SALTS THEREOF AND ANTIBACTERIAL AGENTS COMPRISING THE SAME AS ACTIVE INGREDIENT

Akira Yazaki; Jiro Yoshida; Yoshiko Niino; Yoshihiro Ohshita; Norihiro Hayashi; Hirotaka Amano; Yuzo Hirao, and Yasuhiro Kuramoto, all of Hiroshima, Japan, assignors to Wakunaga Seiyaku Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP95/02156, § 371 Date Jul. 8, 1997, § 102(e) Date Jul. 8, 1997, PCT Pub. No. WO96/12704, PCT Pub. Date May 2, 1996

PCT Filed Oct. 20, 1995, Appl. No. 817,603

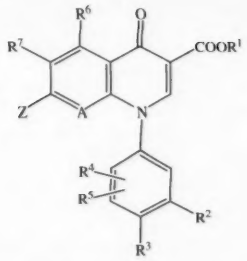
Claims priority, application Japan, Oct. 20, 1994, 6-255046; Jan. 30, 1995, 7-012673

Int. Cl.[6] A61K *31/495;31/47;* **C07D** *401/02;401/04*

U.S. Cl. 514—255 **12 Claims**

1. A pyridonecarboxylic acid derivative of the following general formula (1):

(1)



wherein R^1 is a hydrogen atom or carboxy protecting group, R^2 is a nitro or substituted or unsubstituted amino group, R^3 is a halogen atom, each of R^4 and R^5, which may be the same or different, is a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group with the proviso that both of R^4 and R^5 are not simultaneously hydrogen atoms, R^6 is a hydrogen atom, halogen atom, hydroxy group, lower alkyl group or amino group, R^7 is a hydrogen atom or halogen atom, A is a nitrogen atom or —CX= wherein X is a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group, and Z is a halogen atom or a saturated cyclic amino group which may have a substituent, or a salt thereof.

5,910,499

ANTIALLERGIC AGENT HAVING AN ANTI-OXIDANT ACTION

Toshio Satoh, Tokushima; Tetsuo Ebata, Kunitachi, and Yasuo Kosaka, Matsudo, all of Japan, assignors to LTT Institute Co., Ltd., and Kuree Co., Ltd., both of Tokyo, Japan

Filed Mar. 18, 1998, Appl. No. 40,494

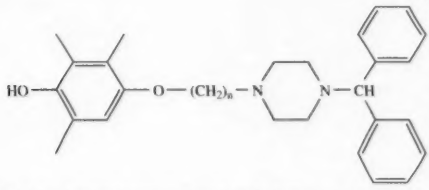
Claims priority, application Japan, Mar. 21, 1997, 9-085558

Int. Cl.[6] A61K *31/495;* **C07D** *295/088*

U.S. Cl. 514—255 **23 Claims**

1. A hydroquinone derivative represented by the following formula:

I



wherein is an integer between 2 and 10 inclusive or a hydrochloride salt of the derivative.

5,910,500

FUNGICIDAL MIXTURES OF AN OXIMETHER CARBOXYLIC ACID AMIDE WITH ANILINOPYRIMIDINES

Barbara Schwalge, Heidelberg; Ruth Müller, Friedelsheim; Herbert Bayer; Hubert Sauter, both of Mannheim; Eberhard Ammermann, Heppenheim; Gisela Lorenz, Hambach, and Siegfried Strathmann, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP96/03353, § 371 Date Jan. 20, 1998, § 102(e) Date Jan. 20, 1998, PCT Pub. No. WO97/06677, PCT Pub. Date Feb. 27, 1997

PCT Filed Jul. 30, 1996, Appl. No. 182

Claims priority, application Germany, Aug. 17, 1995, 195 30 174

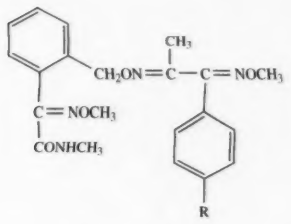
Int. Cl.[6] A01N *37/18;43/54*

U.S. Cl. 514—275 **6 Claims**

***1**. A fungicidal composition comprising*

a) an oxime ether carboxamide compound of the formula *I*

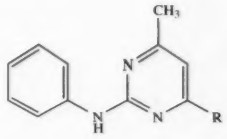
(I)



where R is hydrogen or halogen, and

b) a pyrimidine compound of the formula II

(II)



where R is methyl, propyn-1-yl or cyclopropyl,

in a synergistically active amount.

5,910,501

USE OF CERTAIN ESTERS OF HEXAHYDRO-8-HYDROXY-2,6-METHANO-2H-QUINOLOZIN-3(4H)-ONE AND RELATED COMPOUNDS FOR TREATING COGNITIVE DISORDERS

Maurice W. Gittos, Plobsheim, and Marcel Hibert, Eschau, both of France, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of application No. 08/772,186, Dec. 19, 1996, abandoned, which is a continuation of application No. 08/582,035, Jan. 2, 1996, abandoned, which is a continuation of application No. 08/437,244, May 8, 1995, abandoned, which is a continuation of application No. 08/309,568, Sep. 20, 1994, abandoned, which is a continuation of application No. 08/151,479, Nov. 12, 1993, abandoned, which is a continuation of application No. 08/046,108, Apr. 9, 1993, abandoned, which is a continuation of application No. 07/918,911, Jul. 23, 1992, abandoned, which is a continuation of application No. 07/806,987, Dec. 13, 1991, abandoned. This application Aug. 26, 1997, Appl. No. 921,956.

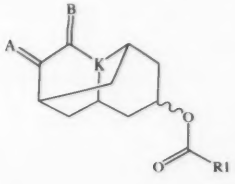
Claims priority, application European Pat. Off., Dec. 21, *1990, 90403748*

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—294 **4 Claims**

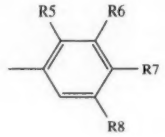
1. The process for treating cognitive disorders which comprises administering to a patient in need thereof a therapeutically effective amount of a compound of the formula:

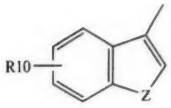
(I)

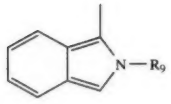


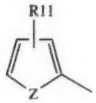
wherein the two lines to both A and B indicate a double bond to a single group or two single bonds to two individual groups as specified: A is (H) (H), =O, (H) (OH) or =N—OH; B is (H) (H), (H) (CH_3), (H) ($CH_2NR_3R_4$) or =CH_2 wherein R_3 and R_4 are C_{2-4} alkyl or are combined to give tetramethylene, pentamethylene or —CH_2CH_2—O—CH_2CH_2—;

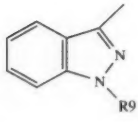
R_1 is



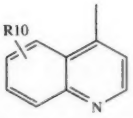








or



wherein Z is NR_9, O or S; R_5, R6 and R_8 are each hydrogen, halogen, C_{1-3} alkyl or C_{1-3} alkoxy; R_7 is hydrogen, amino, (C_{1-4} alkyl)amino, (C_{1-4} alkyl)$_2$ amino, C_{1-3} alkoxy or nitro; R_9 is hydrogen, C_{1-4} alkyl or phenyl(C_{1-2} alkyl); R_{10} is hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy, cyano or -$CONH_2$; R_{11} is hydrogen, halogen, C_{1-4} alkyl or phenyl; the wavy line indicates that the configuration of the oxygen substituent on the ring can be endo or exo; and the pharmaceutically acceptable acid addition and quaternary ammonium salts thereof.

5,910,502

USE OF LEVOBUPIVACAINE IN PAEDIATRIC SURGERY

Brian Albert Gennery, Cambridge, United Kingdom, assignor to Darwin Discovery Limited, United Kingdom

Filed Mar. 3, 1998, Appl. No. 34,070

Claims priority, application United Kingdom, Mar. 3, 1997, 9704351

Int. Cl.[6] **A61K** *31/445*

U.S. Cl. 514—330 **6 Claims**

1. A method of providing anaesthesia or analgesia in human paediatric surgery, which comprises the administration of levobupivacaine.

5,910,503

STABLE MICROBICIDE FORMULATION

John Robert Mattox, Perkasie; Ethan Scott Simon, Abington, and Ramesh Balubhai Petigara, Hatfield, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Provisional application No. 60/063,350, Oct. 28, 1997. This application Feb. 13, 1998, Appl. No. 23,939.

Int. Cl.[6] **A01N** *43/80*

U.S. Cl. 514—372 **11 Claims**

1. A stable microbicide composition comprising:

(a) 0.5 to 35 wt %, based on the weight of the composition, of a water soluble 3-isothiazolone;

(b) 0.2 to 30 wt %, based on the weight of the composition, of a metal nitrate selected from the group consisting of lithium nitrate; sodium nitrate; potassium nitrate; magnesium nitrate; calcium nitrate; and ammonium nitrate;

(c) 0.01 to 35 wt %, based on the weight of the composition, of iodic acid, periodic acid, or their salts; and

(d) water;

wherein the weight ratio of (b) to (a) is 25:1 to 1:25, and the composition is precipitate free.

5,910,504

HETERO-AROMATIC RING SUBSTITUTED PHENYLOXAZOLIDINONE ANTIMICROBIALS

Douglas K. Hutchinson, Kalamazoo, Mich., assignor to Pharmacia & Upjohn, Kalamazoo, Mich.

PCT No. PCT/US96/00718, § 371 Date Aug. 4, 1997, § 102(e) Date Aug. 4, 1997, PCT Pub. No. WO96/23788, PCT Pub. Date Aug. 8, 1996

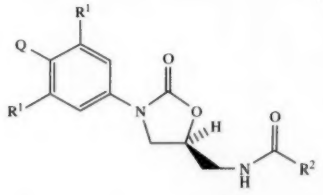
Continuation-in-part of application No. 08/384,278, Feb. 3, 1995, abandoned. This PCT application Jan. 29, 1996, Appl. No. 875,800.

Int. Cl.[6] **C07D** *413/10;* **A61K** *31/42*

U.S. Cl. 514—376 **19 Claims**

1. A compound structurally represented by Formula I

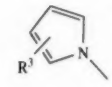
I



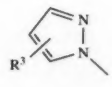
or pharmaceutically acceptable salts thereof wherein:

Q is a hetero-aromatic 5-member ring bound to the aromatic ring of I at the nitrogen of the structures i, ii, iii, iv, v, vi, vii, viii, or ix:

i



ii



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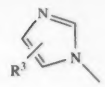
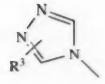
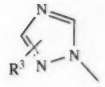
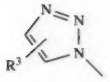
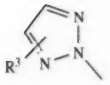
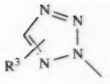
iii 

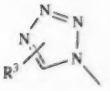
iv 

v 

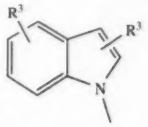
vi 

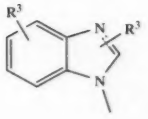
vii 

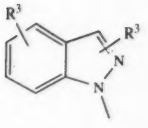
viii 

ix 

or alternatively Q can be a benzoannulated hetero-aromatic 5-member ring bound to the aromatic ring of I at the nitrogen of the structures x, xi, xii, or xiii;

x 

xi 

xii 

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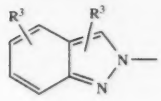
xiii 

R^1 is independently
(a) H,
(b) —OCH_3,
(c) F, or
(d) Cl;

R^2 is
(a) hydrogen,
(b) C_1–C_8 alkyl, optionally substituted with one or more F, Cl, hydroxy, C_1–C_8 alkoxy, or C_1–C_8 acyloxy,
(c) C_3–C_6 cycloalkyl,
(d) amino,
(e) C_1–C_8 alkylamino,
(f) C_1–C_8 dialkylamino, or
(g) C_1–C_8 alkoxy;

R^3 is each independently selected from
(a) H,
(b) F, Cl, Br,
(c) —OR^4,
(d) —SR^4,
(e) —$S(O)_nR^4$ (n is 1 or 2),
(f) —CN,
(g) —O_2CR^4,
(h) —$NHCOR^4$,
(i) —$NHCO_2R^4$,
(j) —$NHSO_2R^4$,
(k) —CO_2R^4,
(l) —$CON(R^4)_2$,
(m) —COR^4,
(n) C_1–C_8 straight or branched chain alkyl or C_3–C_8 cycloalkyl, optionally substituted with one or more of (a)–(m),
(o) Phenyl, optionally substituted with one or more of the preceding groups listed under (a)–(n),
(p) —$CH{=}CHCO_2Et$, or
(q) —$C(=NR_5)R_6$, wherein R_5 is —OH or OCH_3, wherein R_6 is H or CH_3; and

R^4 is
(a) H,
(b) C_1–C_6 straight or branched chain alkyl or C_3–C_8 cycloalkyl, optionally substituted with one or more fluorine, chlorine, hydroxy, C_1–C_4 alkoxy, C_1–C_4 acyl, C_1–C_4 acyloxy, or $O_2CCH_2N(CH_3)_2$, or
(c) Phenyl, optionally substituted with one or more of fluorine, chlorine, C_1–C_4 straight or branched chain alkyl, hydroxy, C_1–C_4 alkoxy, C_1–C_4 acyl, C_1–C_4 acyloxy, or $O_2CCH_2N(CH_3)_2$.

5,910,505

LEUKOTRIENE ANTAGONISTS FOR USE IN THE TREATMENT OR INHIBITION OF ORAL SQUAMOUS CELL CARCINOMA

Jerome H. Fleisch, Carmel; William T. Jackson, and Jason S. Sawyer, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

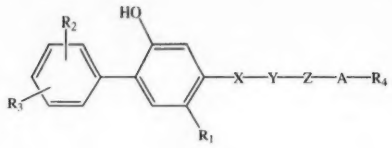
Provisional application No. 60/034,269, Dec. 13, 1996, Provisional application No. 60/040,874, Mar. 21, 1997. This application Dec. 2, 1997, Appl. No. 982,601.

Int. Cl.[6] **A61K** *31/41;38/00;31/445;31/44*

U.S. Cl. 514—381 **14 Claims**

1. A method for treating oral squamous cell carcinoma in a mammal which comprises administering to a mammal in need thereof an effective amount of a compound of the formula

I



wherein:

R_1 is C_1–C_5 alkyl, C_2–C_5 alkenyl, C_2–C_5 alkynyl, C_1–C_4 alkoxy, (C_1–C_4 alkyl)thio, halo, or R_2-substitutedphenyl;

each R_2 and R_3 are each independently hydrogen, halo, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, (C_1–C_4 alkyl)—$S(O)_q$—, trifluoromethyl, or di-(C_1–C_3 alkyl)amino;

X is —O—, —S—, —C(=O), or —CH_2—;

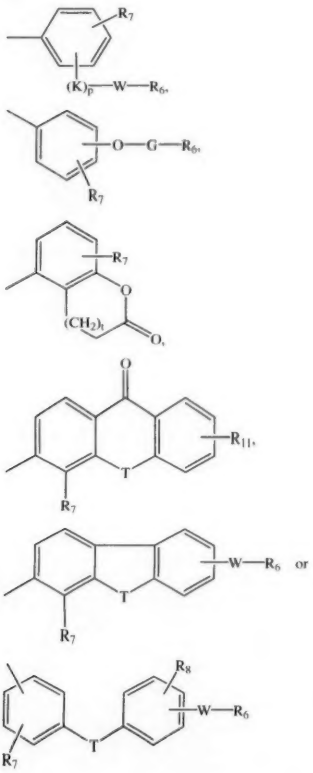
Y is —O— or —CH_2—;

or when taken together, —X—Y— is —CH=CH— or

—C≡C—;

Z is a straight or branched chain C_1–C_{10} alkylidenyl;

A is a bond, —O—, —S—, —CH=CH—, or —CR_aR_b—, where R_a and R_b are each independently hydrogen, C_1–C_5 alkyl, or R_7-substituted phenyl, or when taken together with the carbon atom to which they are attached form a C_4–C_8 cycloalkyl ring;



where,

each R_6 is independently —COOH, 5-tetrazolyl, —$CON(R_9)_2$, or —$CONHSO_2R_{10}$;

each R_7 is hydrogen, C_1–C_4 alkyl, C_2–C_5 alkenyl, C_2–C_5 alkynyl, benzyl, methoxy, —W—R_6, —T—G—R_6, (C_1–C_4 alkyl)—T—(C_1–C_4 alkylidenyl)—O—, or hydroxy;

R_8 is hydrogen or halo;

each R_9 is independently hydrogen, phenyl, or C_1–C_4 alkyl, or when taken together with the nitrogen atom form a morpholino, piperidino, piperazino, or pyrrolidino group;

R_{10} is C_1–C_4 alkyl or phenyl;

R_{11} is R_2, —W—R_6, or —T—G—R_6;

each W is a bond or straight or branched chain divalent hydrocarbyl radical of one to eight carbon atoms;

each G is a straight or branched chain divalent hydrocarbyl radical of one to eight carbon atoms;

each T is a bond, —CH_2—, —O—, —NH—, —NHCO—, —C(=O)—, or —$S(O)_q$—;

K is —C(=O)— or —CH(OH)—;

each q is independently 0, 1, or 2;

p is 0 or 1; and

t is 0 or 1;

provided when X is —O— or —S—, Y is not —O—;

provided when A is —O— or —S—, R_4 is not R_6;

provided when A is —O— or —S— and Z is a bond, Y is not —O—; and

provided W is not a bond when p is 0;

or a pharmaceutically acceptable salt or solvate thereof.

5,910,506

IMIDAZOLE DERIVATIVES AS ANTI-HIV AGENTS

Hirohiko Sugimoto, Osaka, and Tamio Fujiwara, Hyogo, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

PCT No. PCT/JP95/01936, § 371 Date May 30, 1997, § 102(e) Date May 30, 1997, PCT Pub. No. WO96/10019, PCT Pub. Date May 4, 1996

PCT Filed Sep. 25, 1995, Appl. No. 809,624

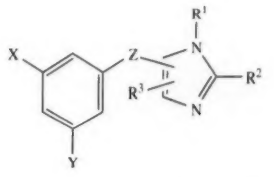
Claims priority, application Japan, Sep. 26, 1994, 6-257490; Mar. 15, 1995, 7-84690; Aug. 12, 1995, 7-227205

Int. Cl.[6] A01N *43/50;* **C07D** *233/40;233/28*

U.S. Cl. 514—397 **4 Claims**

1. A compound selected from the group consisting of an imidazole compound of the formula (I)or a pharmaceutically acceptable salt thereof:

(I)



wherein R^1 represents an alkyl group of 1 to 20 carbon atoms, an alkenyl group of 2 to 7 carbon atoms, a cycloalkylalkyl group of 4 to 12 carbon atoms, a haloalkyl group of 1 to 6 carbon atoms, an oxoalkyl group of 1 to 6 carbon atoms, an aroylalkyl group of 8 to 13 carbon atoms, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted heteroarylalkyl group, a substituted or unsubstituted carbamoyloxyalkyl, carbamoylalkyloxyalkyl, or acyloxyalkyl group, or a branched hydroxyalkyl group;

R^2 represents a group of the formula —$(CH_2)n$—R^4 wherein R^4 represents carbamoyloxy and n represents a whole number 1 to 3;

R^3 represents a substituted or unsubstituted alkyl group of 1 to 6 carbon atoms;

X and Y independently represent hydrogen, an alkyl group of 1 to 3 carbon atoms, halogen or nitro; and

Z represents S, SO, SO_2 or CH_2.

5,910,507

METHODS FOR CONTROL AND MITIGATION OF MOLLUSCS

Billy D. Fellers, Glen Rose, Tex.; Arthur J. Freedman, Lebanon, N.J., and Thomas M. Laronge, Vancouver, Wash., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of application No. 08/290,450, Aug. 15, 1994, Pat. No. 5,622,995, which is a continuation of application No. 07/578,812, Sep. 6, 1990, abandoned. This application Apr. 22, 1997, Appl. No. 840,535.

Int. Cl.[6] **A01N** *43/50;43/54;* **C02F** *1/50*

U.S. Cl. 514—400 **8 Claims**

1. A fresh water molluscicidal method comprising the step of applying to a fresh water target habitat of fresh water mollusks a molluscicidally effective amount of an imidazoline compound or mixture of imidazoline compounds.

5,910,508

POLYCYCLIC POLYENIC COMPOUNDS AND PHARMACEUTICAL/COSMETIC COMPOSITIONS COMPRISED THEREOF

Etienne Thoreau, Saint Vallier De Thiey, and Braham Shroot, Antibes, both of France, assignors to Centre International De Recherches Dermatologiques Galderma, Valbonne, France

Filed Sep. 2, 1997, Appl. No. 921,591

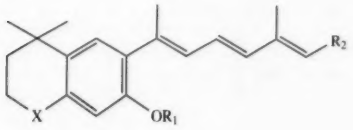
Claims priority, application France, Sep. 2, 1996, 96 10686

Int. Cl.[6] **A61K** *31/38;31/19;* **C07D** *335/04;* **C07C** *62/06*

U.S. Cl. 514—432 **18 Claims**

1. A polycyclic polyenic compound having the structural formula (I):

(I)



in which X is a bivalent radical $>C(CH_3)_2$, an oxygen atom (—O—) or a sulfur atom (—S—); R_1 is a radical of formula $—(CH_2)_n—Z—(CH_2)_o—Y$, wherein Z, Y, n and o are as defined below; Y is —OH, a thiol radical (—SH), a trimethylammonium radical ($—N^+(CH_3)_3$), a cyano radical (—CN), a radical $—COR_3$, or an $—NH_2$ radical, wherein R_3 is as defined below; Z is a methylene radical ($—CH_2—$) or an oxygen atom (—O—); R_2 is a radical $—COR_3$ or $—CH_2—OH$; R_3 is a hydrogen atom, a hydroxyl radical, a lower alkoxy or cycloalkoxy radical, or a radical of formula $—NR_4R_5$; R_4 and R_5, which may be identical or different, are each a hydrogen atom or a lower alkyl radical, or R_4 and R_5 together form a heterocycle with the nitrogen atom from which they depend; and n and o, which may be identical or different, are each an integer ranging from 1 to 5; or a pharmaceutically/cosmetically acceptable salt or optical or geometric isomer thereof.

5,910,509

ANTIMICROBIAL AGENT FOR AGRICULTURE

Sheldon E. Broedel, 4 Prestwick Sq., Baltimore, Md. 21228, and Lawrence I. Kruse, 129 Broad St., P.O. Box 326, Claremont, N.H. 03743

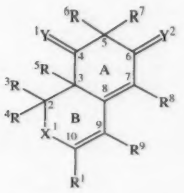
Filed Jun. 20, 1996, Appl. No. 666,984

Int. Cl.[6] **A01N** *43/16*

U.S. Cl. 514—456 **19 Claims**

1. A method of treating or preventing a microbial infection comprising administering to a plant having a composition comprising an infection treating effective amount of a compound of formula I:

I



or a pharmaceutically acceptable salt thereof,

wherein

(1) Y^1 and Y^1 are independently O or S;

(2) R^1

(i) is a straight-chained aliphatic group having about 2 to about 12 carbon atoms,

(ii) the aliphatic group which additionally comprises an about 3 to about 8-membered carbocyclic ring consisting of three or more additional carbon atoms, or

(iii) the aliphatic group which additionally comprises an about 3 to about 8-membered heterocyclic ring, wherein the heterocyclic ring contains up to 4 nitrogen atoms, up to 2 sulfur atoms, up to 2 oxygen atoms or additional carbon atoms,

(2a) wherein the carbocyclic or heterocyclic ring atoms can have 1 to 4 substituents chosen from one or more of the following groups fluoro, chloro, bromo, iodo, hydroxy, (C1–C6) alkoxy, (C1–C6) alkyl, amino which can be substituted with one or two (C1–C3) alkyl groups, nitro, aminocarbonyl which can be N-substituted with one or two (C1–C6) alkyl groups, alkylcarbonyloxy wherein alkyl can be C1–C6, alkoxycarbonyl wherein alkoxy can be C1–C6, hydroxycarbonyl, cyano, (C1–C3) alkylsulfonamido, (C1–C3) haloalkylsulfonamido which can be fully or partially halogenated wherein halo is fluoro, chloro, bromo or iodo, (C1–C8) alkanoylamino, (C1–C3) haloalkyl, which can be fully or partially halogenated wherein halo is fluoro, chloro, bromo or iodo, and alkanoylalkyl wherein alkanoyl is C2–C6 and alkyl is C1–C6;

(2b) wherein the non-ring portions of the straight-chained aliphatic group can be substituted with up to 4 of a (C1–C6) aliphatic group, fluoro, chloro, bromo, iodo, hydroxy, (C1–C6) alkoxy, amino which can be substituted with one or two (C1–C3) alkyl groups, nitro, aminocarbonyl which can be N-substituted with one or two (C1–C6) alkyl groups, alkylcarbonyloxy wherein alkyl can be C1–C6, alkoxycarbonyl wherein alkoxy can be C1–C6, hydroxycarbonyl, cyano, (C1–C3) alkylsulfonamido, (C1–C3) haloalkylsulfonamido which can be fully or partially halogenated wherein halo is fluoro, chloro, bromo or iodo, (C1–C8) alkanoylamino, (C1–C6) alkyl, (C1–C3) haloalkyl, which can be fully or partially halogenated wherein halo is fluoro, chloro, bromo or iodo, or alkanoylalkyl wherein alkanoyl is C2–C6 and alkyl is C1–C6;

(3) X is oxygen;

(4) R^2 is hydroxy, amino which can be substituted with one or two (C1–C8) alkyl groups, (C1–C8) alkyl, (C7–C10) arylalkyl, (C1–C8) alkoxy, (C1–C8) alkanoylamino or aminocarbonyl which can be N-substituted with one or two (C1–C8) alkyl groups,

wherein R^2 can be substituted with up to 4 of alkylcarbonyloxy wherein alkyl can be C1–C6, alkoxycarbonyl wherein alkoxy can be C1–C6, hydroxycarbonyl, fluoro, chloro, bromo, iodo, hydroxy, (C1–C3) alkoxy, amino which can be substituted with one or two (C1–C6) alkyl groups, nitro, aminocarbonyl which can be N-substituted with one or two (C1–C6) alkyl groups, cyano, (C1–C3) alkylsulfonamido, (C1–C8) alkanoylamino, (C1–C3) haloalkylsufonamido, (C1–C3) alkyl, (C1–C3) haloalkyl, or alkanoylalkyl wherein alkanoyl is C2–C3 and alkyl is C1–C3;

(5) R^3 and R^5 either (a) each represent a half bond that together forms a double bond, or (b) R^3 is hydrogen and R^5 is hydrogen, aliphatic group having 1 to 3 carbons, fluoro, chloro, bromo, iodo, nitro, cyano, hydrocarbonyl, alkylcarbonyloxy wherein alkyl can be C1–C6, alkoxycarbonyl wherein alkoxy can be C1–C6, hydroxycarbonyl, (C1–C8) alkoxy, (C1–C8) alkanoylamino, (C1–C5) alkylsulfonamido, hydroxy, amino which can be substituted with one or two (C1–C3) alkyl groups, aminocarbonyl that can be N-substituted with one or two (C1–C6) alkyl groups, (C1–C3) haloalkylsulfonamido, (C1–C3) haloalkyl, or alkanoylalkyl wherein alkanoyl is C2–C3 and alkyl is C1–C3;

(6) R^4 is an aliphatic group having 1 to 3 carbons, cyano, hydroxycarbonyl, alkylcarbonyloxy wherein alkyl can be C1–C6, or alkoxycarbonyl wherein alkoxy can be C1–C6;

(7) R^8 and R^9 are independently hydrogen, aliphatic group having 1 to 3 carbons, fluoro, chloro, bromo, iodo, nitro, cyano, carboxyaldhyde, hydroxycarbonyl, alkylcarbonyloxy wherein alkyl can be C1–C6, alkoxycarbonyl wherein alkoxy can be C1–C6, (C1–C8) alkoxy, (C1–C8) alkanoylamino or (C1–C5) alkylsulfonamido;

(8) R^6 is a (C1–C6) aliphatic group, (C6–C10) aryl, (C7–C10) aralkyl, or a (C1–C3) aliphatic group substituted with a 5 or 6-membered heteroaromatic ring having up to 4 heteroatoms comprising nitrogen, sulfur or oxygen atoms; and

(9) R^7 is —O—R^{10} or —O—(C=O)—R^{11} where R^{10} is a hydrogen or R^{10} and R^{11} are

(9a) an aliphatic group with 1 to 6 carbons, which aliphatic group may be substituted with one to 3 of: hydroxy, fluoro, chloro, bromo, iodo, cyano, amino which can be substituted with one or two (C1–C3) alkyl groups, (C1–C6) alkanoylamino, hydroxycarbonyl, alkylcarbonyloxy wherein alkyl can be C1–C6, alkoxycarbonyl wherein alkoxy can be C1–C6, aminocarbonyl which can be N-substituted with one or two (C1–C6) alkyl groups, (C1–C5) alkylsulfonate which can be partially or fully halogenated wherein halo is fluoro, chloro, bromo or iodo, (C1–C3) alkoxy, nitro, (C1–C6) alkyl, (C1–C3) haloalkyl, alkanoylalkyl wherein alkanoyl is C2–C3 and alkyl is C1–C3, or hydrocarbonyl, and wherein the aliphatic group can be substituted with an aryl or heteroaryl group where the aryl or heteroaryl moiety comprises a 6 or 10-membered aromatic ring, of which up to 4 ring atoms can be nitrogen heteroatoms,

(9a1) wherein the aryl or heteroaryl group can be substituted with up to 4 substituents selected from the group consisting of (C1–C3) aliphatic group, fluoro, chloro, nitro, cyano, carboxyaldhyde, carboxyl, alkylcarbonyloxy wherein alkyl can be C1–C6, alkoxycarbonyl wherein alkoxy can be C1–C6, aminocarbonyl which can be substituted with one or two (C1–C6) alkyl groups, amino, amino substituted with one or two (C1–C3) hydrocarbons, (C1–C6) alkanoylamino, hydroxy, (C1–C3) alkoxy, amino, (C1–C3) alkylsulfonate, (C1–C3) haloalkylsufonate, (C1–C3) haloalkyl, and alkanoylalkyl wherein alkanoyl is C2–C6 and alkyl is C1–C6 or

(9b) an aryl or heteroaryl group where the aryl or heteroaryl group comprises a 6 or 10-membered aromatic ring, of which up to 4 ring atoms can be nitrogen, wherein the aryl or heteroaryl group can be substituted with up to 4 substituents selected from the group consisting of (C1–C3) alkyl, (C1–C3) alkenyl, fluoro, chloro, iodo, bromo, nitro, cyano, carboxyaldhyde, hydroxycarbonyl, alkylcarbonyloxy wherein alkyl can be C1–C6, alkoxycarbonyl wherein alkoxy can be C1–C6, aminocarbonyl which can be N-substituted with one or two (C1–C6) alkyl groups, amino, amino substituted with one or two (C1–C3) aliphatic groups, (C1–C6) alkanoylamino, carboxyl (C1–C6) ester, hydroxy, (C1–C3) alkoxy, (C1–C3) alkylsulfonamido, (C1–C3) haloalkylsulfonamido, (C1–C3) haloalkyl, or alkanoylalkyl wherein alkanoyl is C2–C3 and alkyl is C1–C3,

wherein the following proviso applies: when R^7 is acetyl the compound differs from chrysodin by at least one of (a) the presence or absence of a methylene, (b) the presence of sulfur in the compound in place of an oxygen, (c) the presence of halo, hydroxy, alkoxy, amino, nitro, alkanoylamino, aminocarbonyl, substituted aminocarbonyl, alkoxycarbonyl, hydroxycarbonyl, cyano, alkylsulfonamido, haloalkylsulfonamido, mono or di-alkylamino, alkanoylalkyl or hydrocarbonyl or (d) the presence in R^1 or R^7 of a carbocyclic or heterocyclic ring.

5,910,510

VISION THROUGH PHOTODYNAMIC THERAPY OF THE EYE

H. Andrew Strong, North Van; Julia Levy, Vancouver, both of Canada; Gustav Huber, Zurich, and Mario Fsadni, Buelach, both of Switzerland, assignors to QLT Phototherapeutics Inc, Vancouver, Canada

Continuation of application No. 08/613,420, Mar. 11, 1996, Pat. No. 5,756,541. This application May 22, 1998, Appl. No. 83,480.

Int. Cl.[6] **A61K** *31/295*

U.S. Cl. 514—502 **26 Claims**

1. A method to improve visual acuity in a human subject, which method comprises:

irradiating target ocular tissue in said subject with light emitted from a laser,

wherein said subject has been administered a formulation of a photoactive compound sufficient to permit an effective amount to localize in said target ocular tissue;

wherein the wavelength of the radiation is absorbed by the photoactive compound; and

wherein said radiation is conducted for a time and at an intensity sufficient to improve visual acuity in said subject;

wherein said irradiation is administered beginning about 5–30 minutes after said subject has been administered said formulation.

5,910,511

METHOD OF TREATING AN ASPIRIN-TREATABLE CONDITION USING SALICYCLIC ACID DERIVATIVES

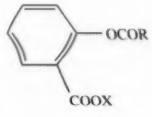
Alvin Guttag, 6612 Whittier Blvd., Bethesda, Md. 20817

Division of application No. 08/224,718, Apr. 8, 1994, abandoned, which is a continuation-in-part of application No. 07/853,428, Mar. 18, 1992, Pat. No. 5,346,929, which is a division of application No. 07/486,217, Feb. 28, 1990, Pat. No. 5,120,089. This application Jan. 21, 1997, Appl. No. 785,979.

Int. Cl.[6] **A01N** *37/10*

U.S. Cl. 514—533 **17 Claims**

1. A method of treating an aspirin-treatable condition comprising administering to a mammal in need of such treatment an amount sufficient to effect said treatment of a compound of Formula I:



wherein R is an alkyl group of 2 to 3 carbon atoms or an alkenyl group of 17 to 23 carbon atoms, an alkenyl group of 17 to 23 carbon atoms; and X is hydrogen or a pharmaceutically acceptable salt forming group.

5,910,512

TOPICAL ANALGESIC USING WATER SOLUBLE CAPSAICIN

Dale Conant, Greenbay, Wis., assignor to Healthline Laboratories, Inc., Green Bay, Wis.

Continuation of application No. 08/229,202, Apr. 18, 1994, abandoned. This application Aug. 2, 1996, Appl. No. 691,505.

Int. Cl.[6] **A01N** *37/18;25/02*

U.S. Cl. 514—617 **12 Claims**

1. A method of treating localized pain comprising the steps of applying water-based topical analgesic to an individual's epidermal layer wherein the analgesic comprises capsaicin wherein the percentage of capsaicin ranges from 0.0025% to 0.25% by weight, magnesium oxide in a range from 0.005% to 20.0% by weight disodium EDTA in a range from 0.005% to 20.0% by weight and water;

said analgesic prepared by mixing the disodium EDTA in the water to form a mixture, adding the magnesium oxide to the mixture at a ratio of about 1 part magnesium oxide to about 8.7 parts disodium EDTA, and thereafter adding the capsaicin.

5,910,513

SUBSTITUTED BENZYL DERIVATIVES OF POLYALKYLENE POLYAMINES AND THEIR USE IN COSMETIC AND PHARMACEUTICAL COMPOSITIONS

Jean-Baptiste Galey, Aulnay-Sous-Bois, France, assignor to L'Oreal, Paris, France

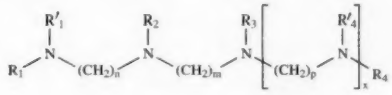
Filed Jun. 16, 1997, Appl. No. 876,585

Claims priority, application France, Jun. 18, 1996, 96 07541

Int. Cl.[6] **A61K** *31/135;* **C07C** *211/13*

U.S. Cl. 514—649 **13 Claims**

1. A compound which is a substituted benzyl derivative of polyalkylene polyamine and corresponding to the following formula:



in which:

n and m=2, 3, or 4,

p=2 or 3,

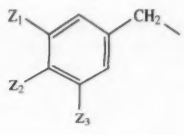
x=0, 1 or 2

R_1 and R_4, which may be identical or different, represent

(i) a linear or branched C_1–C_4 alkyl radical or

(ii) a radical of the following formula:

(A)

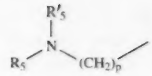


in which:

Z_1 represents OH or OR,

Z_2 and Z_3 represent H, OH or OR, R being a linear or branched C_1–C_8 alkyl radical, R_2 and R_3, which may be identical or different, represent H, a linear or branched C_1–C_4 alkyl radical, a radical of formula (A) or a radical of the following, formula (B)

(B)



R'_1, R'_4, and R'_5 represent H or a linear or branched C_1–C_4, alkyl radical, and R_5 represents a linear or branched C_1–C_4 alkyl radical or a radical of formula (A), with the proviso that at least one of the radicals R_1, R_2, R_3, R_4 or R_5 represents a radical of formula (A), wherein Z_1, Z_2, and Z_3 are identical and represent OR, R being a C_1–C_6 alkyl radical.

5,910,514

SYNTHETIC MULCH

Lee M. Greenberg, 12058 Craigview, Creve Coeur, Mo. 63146, and Judy A. Smith, 5880 Waterman, 1 South, St. Louis, Mo. 63112

Filed Oct. 1, 1997, Appl. No. 953,824

Int. Cl.[6] **C08J** *11/04;* **A01G** *13/02*

U.S. Cl. 521—40.5 **8 Claims**

1. A synthetic mulch material sized, shaped, and colored to imitate a natural mulch, wherein said synthetic mulch is comprised of:

a) a plurality of rubber particles, with the rubber selected from the group consisting of natural polymers and synthetic high polymers, with said rubber particles having an outer surface designed and dimensioned to look like natural mulch selected from the group consisting of pea gravel, wood chips, and tree bark, and a length ranging between about 1/16 inch and about 8 inches and a width ranging between about 1/16 inches and about 2 inches; and,

b) an amount of water based acrylic colorant added in an amount equal to between about 3% and about 10% by weight of said rubber particles, with said colorant coating said rubber particles thereby forming said synthetic mulch.

5,910,515

POLYURETHANE FOAM

Claudio Chittolini, Reggio Emilia, Italy, assignor to EDILTEC S.r.L., Modena, Italy

Division of application No. 08/826,756, Mar. 24, 1997, Pat. No. 5,859,078. This application Sep. 24, 1998, Appl. No. 159,779.

Int. Cl.[6] **C08G** *18/30;18/34*

U.S. Cl. 521—109.1 **12 Claims**

1. A polyurethane or polyisocyanurate foam derived from a mixture comprising a crude isocyanate component and a polyol component which contains all or some of the following products in a homogeneous mixture: polyols, catalysts, surfactants, water, flame-retardants, fillers, dyes, pigments, expanding agents and a *compatibilizing agent for the expanding agents, wherein said* expanding agents comprise of a pentane component and said compatibilizing agent is a dialkanolamide derived from oily or fatty substances of vegetable origin and is present in an amount of at least 5% by weight of the weight of said polyol component, wherein the solubility of the pentane in the polyol component is enhanced due to the presence of the dialkanolamide.

5,910,516

PROCESS FOR PRODUCTION OF PHOTOCHROMIC CURED PRODUCT

Satoshi Imura, and Toshihiro Nishitake, both of Tokuyama, *Japan, assignors to Tokuyama Corporation, Yamaguchi,* Japan

PCT No. PCT/JP96/01384, § 371 Date Jan. 23, 1997, § 102(e) Date Jan. 23, 1997, PCT Pub. No. WO96/37573, PCT Pub. Date Nov. 28, 1996

PCT Filed May 24, 1996, Appl. No. 776,030

Claims priority, application Japan, May 26, 1995, 7-128145

Int. Cl.[6] C08F *2/48*

U.S. Cl. 522—39 15 Claims

1. A process for producing a photochromic cured product, which comprises subjecting a photopolymerizable composition containing

(A) a radical-polymerizable monomer,

(B) an ultraviolet polymerization initiator having the main absorption in an ultraviolet region and a molar extinction coefficient at 400 nm of 150 lit./(mol·cm) or more, and

(C) a photochromic compound, to an irradiation with an active energy ray having, as the main spectrum, an emission spectrum of 400 nm or more, to cure the composition, wherein the irradiation with an active energy ray is conducted through a filter capable of eliminating an ultraviolet light having a wavelength of shorter than 400 nm.

5,910,517

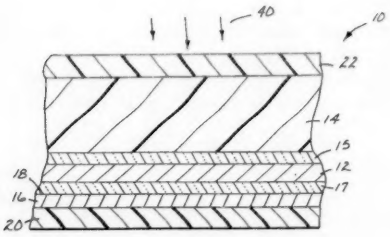
OPTICAL RECORDING MEDIUM WITH ANTISTATIC HARD COATING

Edward J. Woo, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of application No. 07/727,472, Jul. 9, 1991, Pat. No. 5,176,943. This application Oct. 2, 1992, Appl. No. 956,107.

Int. Cl.[6] C08F *2/46*

U.S. Cl. 522—78 12 Claims



1. An antistatic composition, comprising:

(a) 100 parts by weight of, ethylenically unsaturated, nonfluorinated copolymerizable, radiation curable monomers;

(b) from 0.5 to 5.0 parts by weight of a nonionic perfluoro surfactant; and

(c) from 0.5 to 5.0 parts by weight of an ionic perfluoro surfactant.

5,910,518

OXYGEN PERMEABLE CONTACT LENS HAVING HIGH DURABLE HYDROPHILIC SURFACE AND METHOD FOR PRODUCING THE SAME

Kazuhiko Nakada, Nisshin; Naomi Saito, Tokyo; Misako Nishibayashi, Aichi-ken; Atsuyuki Nakamura, Nagoya, and Yasuhito Hishida, Gifu-ken, all of Japan, assignors to Menicon Co., Ltd., Japan

Continuation of application No. 08/738,578, Oct. 29, 1996, Pat. No. 5,708,050, which is a division of application No. *08/559,161, Nov. 13, 1995, abandoned. This application Aug.* 12, 1997, Appl. No. 909,829.

Claims priority, application Japan, Nov. 17, 1994, 6-283169; Sep. 19, 1995, 7-239623

Int. Cl.[6] C08J *7/04;* G02B *1/04*

U.S. Cl. 523—106 4 Claims

1. A hydrophilic oxygen permeable contact lens having a front surface that is not to be in contact with the cornea of a human eye when said contact lens is worn on said human eye, said hydrophilic oxygen permeable contact lens being produced by a method comprising the steps of:

preparing an aqueous solution containing, as a hydrophilicity rendering material, 0.05–25% by weight of a surface active agent whose number average molecular weight is in the range of 400–100,000, said surface active agent being obtained by chemically bonding using alkali an end amino group of a hydrolyzed collagen to fatty acid chloride;

coating at least said front surface of an oxygen permeable contact lens with said surface active agent, by contacting said contact lens with said aqueous solution containing said surface active agent as said hydrophilicity rendering material;

irradiating said contact lens whose front surface has been coated with said surface active agent, with ultraviolet rays; and

drying said contact lens which has been irradiated with said ultraviolet rays.

5,910,519

METHOD OF FORMING SHAPED HYDROGEL ARTICLES INCLUDING CONTACT LENSES USING INERT, DISPLACEABLE DILUENTS

Ivan M. Nuñez, Jacksonville; Frank F. Molock, Orange Park; Laura D. Elliott, Jacksonville, and James D. Ford, Orange Park, all of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation of application No. 08/410,025, Mar. 24, 1995, Pat. No. 5,684,058. This application Aug. 1, 1997, Appl. No. *918,714.*

This patent is subject to a terminal disclaimer.

Int. Cl.[6] C08F *24/00;* G02C *7/04*

U.S. Cl. 523—106 5 Claims

1. A process for producing shaped hydrogel articles and soft contact lenses which comprises the steps of:

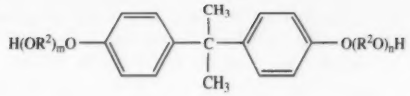
(1) molding or casting a polymerization mixture comprising:

(a) a monomer mixture comprising a major proportion of one or more hydrophilic monomers, and one or more crosslinking monomers; and

(b) an inert, displaceable, non-aqueous diluent wherein said inert diluent is a mixture of polyethylene glycol of the formula:

$$HO-(CH_2-CH_2O)_nH$$

wherein n represents a number such that the molecular weight of the polyethylene glycol is within the range of from about 300 to about 10,000 and an ethoxylated bisphenol A of the formula:



wherein R^2 represents $—CH_2—CH_2—$, and m+n is a number within the range of from about 2 to about 100 under conditions to polymerize the monomer mixture to produce a shaped gel of a copolymer of the monomers and the diluent; and

(2) thereafter replacing the diluent with water; provided that the inert diluent is selected such that when the polymerization mixture is polymerized in a photo differential scanning calorimeter wherein the polymerization is induced by ultraviolet irradiation at a light intensity of from about 2.5 to 3 mW/cm^2, the time to maximum exotherm of the polymerization is within the range of from about 0.2 to about 3.5 minutes and the percent of conversion to polymer of the monomer mixture at maximum exotherm is at least 40 percent.

5,910,520

MELT PROCESSABLE BIODEGRADABLE COMPOSITIONS AND ARTICLES MADE THEREFROM

Shmuel Dabi, Highland Park, and Ram L. Kataria, Hamilton Square, both of N.J., assignors to McNeil-PPC, Inc., Skillman, N.J.

Filed Jan. 15, 1993, Appl. No. 6,013

Int. Cl.[6] C08L *3/02;67/04;67/02;* **C08K** *5/103*

U.S. Cl. 523—128 **14 Claims**

1. A composition of matter comprising

a. about 15 to 50 wt. % of a starch-polymer alloy, the starch-polymer alloy comprising:

i. about 50 to 80 wt. % destructurized starch and about 20 to 50 wt. % of a hydrophobic copolymer selected from the group consisting of ethylene-vinyl acetate having a vinyl acetate molar content of from about 5 to 90%, modified ethylene vinyl-acetate having from about 5 to 90% of hydrolyzed acetate groups, ethylene-glycidil acrylate, ethylene-methyl methacrylate, ethylene-maleic anhydride, and mixtures thereof;

ii. a plasticizer present in an amount of about 20 to 60 wt. % of the destructurized starch component of (i) present in the starch-polymer alloy, said plasticizer is selected from the group consisting of glycerine; polyethylene glycol; ethylene glycol; propylene glycol; sorbitol; mannitol; the acetate, ethoxylated and propoxylated derivatives of glycerine, polyethylene glycol, ethylene glycol, propylene glycol, sorbitol, mannitol; and mixtures thereof; and

iii. 0 up to about 20% urea with respect to the weight of the destructurized starch component of (i); and

b. about 15 to 55 wt. % of unmodified starch; and

c. a water soluble plasticizer containing hydroxyl groups and *having a molecular weight of less than about 1000.*

5,910,521

BENZOXAZINE POLYMER COMPOSITION

Calvin K. Johnson, Lockport, Ill., and Jimmy Pingao Chen, Prospect, Ky., assignors to Borden Chemical, Inc., Columbus, Ohio

Filed Apr. 1, 1998, Appl. No. 53,541

Int. Cl.[6] B22C *1/22*

U.S. Cl. 523—145 **28 Claims**

1. A benzoxazine polymer composition comprising the product of mixing and reacting in aqueous solution:

a phenolic resole component having at least one —CH group in the benzene ring ortho to the phenolic —OH group per molecule;

a methylolmelamine component having at least one primary amine; and

an aldehyde;

wherein the aldehyde amount is at least 1.0 mole per mole-equivalent of methylolmelamine present; wherein the resole amount is such that there is at least one equivalent of reactive phenolic group for every two moles of aldehyde added.

5,910,522

COMPOSITE ADHESIVE FOR OPTICAL AND OPTO-ELECTRONIC APPLICATIONS

Helmut Schmidt, Saarbrücken-Güdingen; Martin Mennig, Quierschied; Gerhard Jonschker, Spiesen-Elversberg, and Volker Gerhard, Saarbrüken, all of Germany, assignors to Institut für Neue Materialien gemeinnützige GmbH, Saarbrü cken, Germany

PCT No. PCT/EP96/01448, § 371 Date Oct. 3, 1997, § 102(e) Date Oct. 3, 1997, PCT Pub. No. WO96/31572, PCT Pub. Date Oct. 10, 1996

PCT Filed Apr. 2, 1996, Appl. No. 930,424

Claims priority, application Germany, Apr. 3, 1995, 195 12 427

Int. Cl.[6] C08K *3/00*

U.S. Cl. 523—168 **14 Claims**

1. A composite adhesive for optical and opto-electronic applications, comprising:

(a) at least one transparent polymer and/or polymerizable oligomer and/or polymerizable monomer suitable for use as an adhesive,

(b) nanoscale inorganic particles,

(c) compounds for the surface modification of said nanoscale inorganic particles, and

(d) optionally, a crosslinking initiator,

wherein said nanoscale inorganic particles are substantially agglomerate-free, and

wherein said compounds for the surface modification of said nanoscale inorganic particles are selected from a group consisting of carboxylic acid amides, carboxylic acid esters, amino acids, β-diketones, imides and quaternary ammonium salts of the general formula $N^+R^1R^2R^3R^4X^-$, wherein the radicals R^1 to R^4, the same or different from each other, may be aliphatic, aromatic and/or cycloaliphatic groups and X^- is an inorganic or organic anion.

5,910,523

POLYOLEFIN NANOCOMPOSITES

Steven David Hudson, 3372 E. Fairfax Rd., Cleveland Heights, Ohio 44118

Filed Dec. 1, 1997, Appl. No. 980,738

Int. Cl.[6] C08K *9/06*

U.S. Cl. 523—213 **13 Claims**

1. A semi-crystalline polyolefin composition, comprising;

a) from about 50 to about 99 weight percent of a semi-crystalline polyolefin,

b) from about 0.1 to about 50 weight percent of a clay filler having dispersible platelets in stacks, said platelets each having a thickness between about 1 and about 30 nanometers and said stacks being swollen with polymer intercalated in said stacks,

c) from about 0.001 to about 3 weight percent of an amino functional silane reacted with said filler, and

d) from about 0.1 to about 30 weight percent of a carboxylated or maleated semi-crystalline polyolefin having been reacted with said aminofunctional silane after said silane was reacted with said filler,

wherein said weight percents are based upon the weight of said semi-crystalline polyolefin composition.

5,910,524

CORROSION-RESISTANT, FORM-IN-PLACE EMI SHIELDING GASKET

John P. Kalinoski, Chelmsford, Mass., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation-in-part of application No. 08/375,853, Jan. 20, 1995, abandoned. This application Oct. 6, 1997, Appl. No. 944,897.

Int. Cl.[6] C08K *9/00*

U.S. Cl. 523—215 **36 Claims**

1. A one-part, fluent polymeric reaction system which may be applied as a form-stable bead to a surface of a substrate and cured by thermal-addition thereon under substantially atmospheric pressure to form a corrosion-resistant, electrically-conductive, elastomeric EMI shielding gasket having an EMI shielding effectiveness of at least about 80 dB substantially over a frequency range of between about 10 MHz and about 10 GHz, said reaction system having a strip volume resistivity of from about 500–1000 mΩ-cm and comprising an admixture of:

(a) a silicone resin binder component including a first functional group;

(b) a cross-linking agent component including a second functional group reactive with said first functional group of said binder component;

(c) a metallic catalyst component effective to catalyze the reaction of said first and second functional groups; and

(d) an electrically-conductive filler component comprising nickel-coated graphite particles.

5,910,525

SILICONE RUBBER COMPOSITION AND METHOD FOR *THE PREPARATION THEREOF*

Takao Matsushita, and Osamu Takuman, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1997, Appl. No. 895,711

Claims priority, application Japan, Jul. 30, 1996, 8-216723

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—267 **13 Claims**

1. A silicone rubber composition comprising

(A) 100 weight parts polyorganosiloxane described by average formula $R_aSiO_{(4-a)/2}$, where R denotes substituted and unsubstituted monovalent hydrocarbon groups and a is a number from 1.95 to 2.05 and having at least 2 silicon-bonded alkenyl groups in each molecule;

(B) 10 to 100 weight parts microparticulate silica;

(C) the reaction mixture of

(a) a platinum compound and

(b) a compound containing a carbon-carbon double bond and a carbon-carbon triple bond in a quantity that provides 1 to 1,000 weight parts as platinum metal for each 1,000,000 weight parts component (A); and

(D) curing agent in a quantity sufficient to cure the composition.

5,910,526

POLYPHENYLENE OXIDE DELIVERY SYSTEM FOR ADHESIVE COMPOSITIONS

Wayne K. Chu, Tarrytown, N.Y., and Erwin R. Ruckel, Wilton, Conn., assignors to Arizona Chemical Company, Panama City, Fla.

Division of application No. 08/803,873, Feb. 24, 1997, Pat. No. 5,807,915, which is a continuation of application No. 08/535,903, Sep. 28, 1995, abandoned. This application Sep. 14, 1998, Appl. No. 152,380.

Int. Cl.[6] C08L *93/04;71/12;53/02*

U.S. Cl. 524—270 **17 Claims**

1. A method for making an A-B-A block copolymer composition which comprises:

premixing, at an elevated temperature, from about 5 to about 45 parts by weight polyphenylene oxide (PPO) resin having a glass transition temperature (T_g) within the range of from about 150° to about 210° and a number average molecular weight ranging from about 2,000 to about 6,000 Daltons with from about 1 to about 450 parts by weight of a B-block compatible resin thereby forming a PPO/B-block resin preblend; and

mixing the preblend with an A-B-A block copolymer having styrenic A-blocks and an elastomeric conjugated diene B-block at a temperature sufficient to form a substantially homogeneous mixture thereof.

5,910,527

HOT MELT ADHESIVE HAVING A HIGH ACID NUMBER FOR DISPOSABLE SOFT GOODS

Mark D. Alper, New Berlin, and Diane Strelow, Germantown, both of Wis., assignors to Ato Findley, Inc., Wauwatosa, Wis.

Continuation of application No. 08/559,411, Nov. 5, 1995, abandoned, which is a continuation of application No. 08/234,821, Apr. 28, 1994, abandoned. This application Aug. 19, 1997, Appl. No. 914,523.

Int. Cl.[6] C09J *109/06;125/10;193/04;* **C08L** *53/02*

U.S. Cl. 524—274 **11 Claims**

1. A hot melt adhesive composition for binding a first substrate to a second substrate, and wherein one of the substrates includes an anti-blocking agent which blooms to the exterior surface thereof, the hot melt adhesive composition consisting essentially of:

about 15% to about 30% by weight of an A-B-A block copolymer, and wherein the A block is styrene and the B block includes isoprene;

about 20% to about 65% by weight of resin, said resin comprising a fumaric acid modified pentaerythritol ester of tall oil rosin;

about 10% to about 30% by weight of a compatible mineral oil; and

about 1 to about 3% by weight of an anti-oxidant and wherein the hot melt adhesive has a viscosity of less than 10,000 cP at 325° F., a melting point of less than 190° F., and an acid number of about 30 to about 80.

5,910,528

TABLE TENNIS RUBBER SOLVENT AND ADHESIVE SYSTEMS

Waqidi Falicoff, 2921 Nova Dr., and Harald Sandner, 650 Tolman Creek Rd., both of Ashland, Oreg. 97520

Provisional application No. 60/014,457, Mar. 27, 1996. This application Mar. 27, 1997, Appl. No. 826,163.

Int. Cl.[6] C08K *5/10*

U.S. Cl. 524—315 **2 Claims**

1. A method for speed gluing a table tennis racket, comprising:

forming a solvent system comprising a cycloalkane having from about 3 to about 10 carbon atoms, an ester having from about 2 to about 10 carbon atoms, and a terpene having a molecular weight of from about 110 to about 160;

applying the solvent system to a table tennis rubber, a table tennis blade, or both, wherein the rubber and/or the tennis blade provides sufficient adhesive to adhere the rubber to the blade; and

attaching the rubber to the blade, thereby forming a speed glued table tennis racket.

5,910,529

GEL COMPOSITION HAVING THICKENING AGENT PROVIDING BINGHAM PLASTIC PROPERTIES

Mark R. Wollner, Woodbury, Minn., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.

Filed Dec. 20, 1996, Appl. No. 771,752
Int. Cl.[6] C08K 3/34;5/098; B01J 13/00
U.S. Cl. 524—394 33 Claims

1. A gel composition comprising:

(a) a component selected from the group consisting of aqueous dispersion(s) comprising a binder(s), aqueous emulsion(s) comprising a binder(s), and combinations thereof, wherein the component has a minimum film forming temperature of 22° C. or less;

(b) a thickening agent of a type and in a sufficient amount to provide the composition with Bingham plastic properties when shear is applied to the composition;

(c) optionally additional water beyond that which is present due to the aqueous nature of the component of element (a);

(d) a water dispersible inorganic pigment(s); and

(e) optionally a pH adjusting agent;

wherein the pH of the composition falls within the range of about 6 to about 9.

5,910,530

HIGH DAMPING GEL DERIVED FROM EXTENDING GRAFTED ELASTOMERS AND POLYPROPYLENE

Xiaorong Wang, Akron; Frank J. Clark, Massillon; Hideo Takeichi, Akron, all of Ohio; Takahiro Matsuse; Naruhiko Mashita, both of Kodaira, Japan, and Shinichi Toyosawa, Tokorozawa, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 19, 1997, Appl. No. 858,304
Int. Cl.[6] C08J 3/21; C08L 51/00
U.S. Cl. 524—534 25 Claims

1. An extended polymer composition comprising:

100 parts by weight of a graft copolymer composition formed by reacting a maleated block copolymer having at least one hard block and at least one elastomeric block, a maleated polypropylene polymer, and an organic diamine grafting agent reactive with two maleate functional groups, and at least 30 part by weight of an extender comprising an extender oil or an organic material having a number-average molecular weight of less than 20,000, said composition having a Shore A hardness ranging from at least 0 to about 26 at about 20° C. to 25° C. and having a tan δ in the range of about 0.24 to about 1.0 over the temperature range of 65° C. to 100° C.

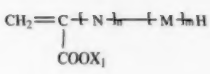
5,910,531

DETERGENT AND DISPERSANT COMPOSITIONS FROM HIGH TEMPERATURE POLYMERIZATION PRODUCTS

Michael Bennett Freeman, Harleysville; Gary Robert Larson, Hatfield; Richard Foster Merritt, Fort Washington, all of Pa.; Yi Hyon Paik, Princeton, N.J.; Jan Edward Shulman, Newtown, Pa.; Graham Swift, Blue Bell, Pa., and Robert Wilczynski, Yardley, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

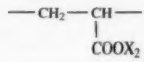
Continuation of application No. 08/467,686, Jun. 6, 1995, abandoned, which is a division of application No. 08/258,300, Jun. 13, 1994, abandoned. This application Feb. 10, 1997, Appl. No. 798,145.
Int. Cl.[6] C08K 5/00; C11D 3/37
U.S. Cl. 524—556 4 Claims

1. A detergent composition comprising a terminally unsaturated oligomer of the formula:



(I)

wherein N is a residue of the formula



wherein X_1 and X_2 are independently selected from the group consisting of H, NH_4, alkali metals and alkaline earth metals;

wherein M is the residue of a monoethylenically unsaturated monomer;

wherein m is 0 to 47;

wherein n is 2 to 50;

and wherein the sum of n and m is less than or equal to 50.

5,910,532

MULTISOLVENT-BASED FILM-FORMING COMPOSITIONS

Donald L. Schmidt, and Robert D. Mussell, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 29, 1997, Appl. No. 865,536
Int. Cl.[6] C08J 3/00
U.S. Cl. 524—556 20 Claims

1. A composition comprising:

a) a polymer that contains strong cationic groups and acid groups; and

b) a multisolvent medium that contains water, a low-boiling polar organic solvent which has at least one hydroxy group, is soluble in water in all proportions, and has a boiling poing in the range of from about 70° C. to about 134° C.; and a high-boiling solvent, which has a boiling point in the range of from about 135° C. to about 250° C.;

wherein the polymer, the water, the polar organic solvent, and the high-boiling solvent are present in such proportions that the polymer is dispersed in the multisolvent medium.

5,910,533

ELASTOMERIC MATERIAL FOR RUBBER ARTICLES

Kanchan Ghosal, Richardson, Tex., and Venkataram Krishnan, Cary, N.C., assignors to Reichhold Chemicals, Inc., Durham, N.C.

Filed Aug. 4, 1997, Appl. No. 918,719
Int. Cl.[6] C08L 33/06
U.S. Cl. 524—560 23 Claims

1. A crosslinked film formed from a polymer latex composition, said polymer latex composition comprising:

about 80 to about 99 weight percent of an aliphatic conjugated diene monomer;

above 0 to about 10 weight percent of unsaturated acid monomer; and

from 0 to about 20 weight percent of an additional unsaturated monomer;

wherein said crosslinked film has a glass transition temperature of no greater than about −50° C. and a level of crosslinking such that the crosslinked film has a tensile strength of at least

about 1000 psi, an elongation of at least about 600 percent, and a modulus at 100 percent elongation of no more than about 300 psi.

5,910,534

STABLE, AQUEOUS DISPERSIONS OF COPOLYMERS BASED ON CONJUGATED, ALIPHATIC DIENES AND VINYL AROMATIC COMPOUNDS

Andreas Ostrowicki, Köln, Germany; Joachim Waldi, Ontario, Canada, and Dennis-Wayne Jones, Langenfeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jul. 8, 1997, Appl. No. 889,644

Claims priority, application Germany, Jul. 15, 1996, 196 28 446

Int. Cl.[6] **C08L** *9/08*

U.S. Cl. 524—575 **7 Claims**

1. An emulsion polymerization process for producing stable, aqueous dispersions of copolymers, the process comprising:

combining in the presence of water and water-soluble initiators

(a) conjugated aliphatic dienes, in an amount of between about 20 and about 80 parts by weight,

(b) vinyl aromatic compounds, in an amount of between about 20 and about 80 parts by weight,

(c) ethylenically unsaturated carboxylic acids and/or dicarboxylic acids, in an amount of between about 0.1 and about 10 parts by weight,

(d) ethylenically unsaturated carboxylic acid nitrites, in an amount of up to about 20 parts by weight,

(e) copolymerizable vinyl compounds, different from component (b), in an amount of up to about 20 parts by weight,

(f) base, in an amount sufficient to neutralize between about 1% and about 50% of carboxylic acid groups from component (c), and

(g) emulsifier, in an amount of between about 0.1 and about 5 parts by weight per 100 parts by weight of the sum of components (a) to (e), the emulsifier comprising at least one component selected from the group consisting of (i) sulphuric acid half-esters of ethoxylated fatty acid alcohols, (ii) esters of alkylpolyoxyethylene sulphosuccinates, (iii) half-esters of alkylpolyoxyethylene sulphosuccinates, (iv) salts of esters of alkylpolyoxyethylene sulphosuccinates, and (v) salts of half esters of alkylpolyoxyethylene sulphosuccinates,

wherein between about 15 and about 85 weight percent of the emulsifer is added within the time required to obtain about 40% overall conversion of monomeric components (a) to (e).

5,910,535

WATER BASED COATING COMPOSITION HAVING SACRIFICIAL LAYER FOR STAIN REMOVAL

John Ralph Smith, Gansevoort, N.Y., assignor to Decora, Incorporated, Fort Edward, N.Y.

Filed May 3, 1996, Appl. No. 642,665

Int. Cl.[6] **C08K** *83/00*

U.S. Cl. 524—588 **14 Claims**

1. A modified coating composition for application to a substrate surface comprising:

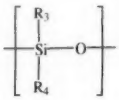
a) an acrylic water based latex paint composition with a pigment value content in the range of from about 20% to about 70%; and

b) about 2 to about 12% of the weight of the composition of a polysiloxane that is less than 1% water soluble and formed from monomeric units having structures (I) and (II) as follows:

(I)

and

(II)



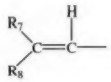
wherein R_1 is selected from the group consisting of:

(i) phenyl;

(ii) methyl;

(iii) tolyl; and

(iv)



R_2 is methyl, ethyl or phenyl, R_3 and R_4 are methyl or ethyl and R_7 R_8 are hydrogen, methyl, or ethyl

wherein the modified coating composition when applied to the substrate surface comprises sacrificial layers that can be removed by use of a sponge or brush and water without significantly affecting the appearance of the coating.

5,910,536

POLYURETHANE PRESSURE-SENSITIVE ADHESIVES

Agis Kydonieus, Kendall Park; Kishore Shah, and Aruna Nathan, both of Bridgewater, all of N.J., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Provisional application No. 60/008,915, Dec. 20, 1995. This application Dec. 19, 1996, Appl. No. 772,217.

Int. Cl.[6] **C08J** *3/00;3/28;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—590 **22 Claims**

1. A method of forming a based adhesive composition comprising:

(a) reacting a diol or polyol with a diisocyanate having a functionality of about 2.0 to form a first prepolymer having terminal isocyanate groups;

(b) reacting the first prepolymer with an effective amount of a first compound capable of converting at least some of the terminal isocyanate groups on the first prepolymer to terminal methacrylate groups to form a second prepolymer having said terminal methacrylate groups;

(c) reacting the second prepolymer with an isocyanate group quenching compound to form a third prepolymer; and

(d) subjecting the third prepolymer to irradiation in the presence of a photoinitiator or a temperature sufficient to form said poly[urethane-(meth)acrylate]-based adhesive.

5,910,537

BIOCOMPATIBLE, OPTICALLY TRANSPARENT, ULTRAVIOLET LIGHT ABSORBING, POLYMERIC MATERIAL BASED UPON COLLAGEN AND METHOD OF MAKING

Vladimir Feingold, Laguna Niguel, and Alexei V. Osipov, Laguna Hills, both of Calif., assignors to STAAR Surgical Company Inc., Monrovia, Calif.

Continuation-in-part of application No. 08/485,253, Jun. 7, 1995, Pat. No. 5,654,388, and a continuation-in-part of application No. 08/475,574, Jun. 7, 1995, Pat. No. 5,654,349, and a continuation-in-part of application No. 08/475,578, Jun. 7, 1995, Pat. No. 5,654,363, and a continuation-in-part of application No. 08/485,252, Jun. 7, 1995, Pat. No. 5,661,218, said application No. 08/485,253 , said application No. 08/475,574 , said application No. 08/475,578 , said application No. 08/485,252 , each is a continuation-in-part of application No. 08/279,303, Jul. 22, 1994, abandoned. This application May 28, 1997, Appl. No. 865,420.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] C08G *63/48*

U.S. Cl. 525—64 **20 Claims**

1. A biocompatible, optically transparent, ultraviolet light absorbing polymeric material based on collagen, comprising:

one or more hydrophilic acrylic or allelic monomers, and at least one ultraviolet light absorbing hydrophobic acrylic or allelic monomers; and

telo-collagen containing telo-peptides,

wherein said one or more hydrophilic acrylic or allelic monomers and said at least one ultraviolet light absorbing hydrophobic acrylic or allelic monomers, are graft-polymerized with said telo-collagen to form a biocompatible, optically transparent, ultraviolet light absorbing polymeric material based on collagen.

5,910,538

COMPATIBILIZED ABS POLYCARBONATE MOLDING

Allen R. Padwa, Worcester, and Venkatarayaloo Janarthanan, Holyoke, both of Mass., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Apr. 24, 1998, Appl. No. 66,490

Int. Cl.[6] C08L *51/00*

U.S. Cl. 525—67 **10 Claims**

1. A thermoplastic molding composition comprising

A) 20 to 90 parts by weight of an aromatic polycarbonate,

B) 4.5 to 70 parts by weight of a vinyl copolymer of

B.1) 50 to 99 percent relative to the weight of the copolymer of at least one member selected from the group consisting of styrene, alpha-methyl styrene, nucleus-substituted styrene, C_{1-8}-alkyl methacrylate and C_{1-8}-alkyl acrylate and

B.2) 1 to 50 percent relative to the weight of the copolymer of at least one member selected from the group consisting of acrylonitrile, methacrylonitrile, C_{1-8}-alkyl methacrylate, C_{1-8}-alkyl acrylate, maleic anhydride, C_{1-4}-alkyl-N-substituted maleic imide and C_{1-4}-phenyl-N-substituted maleic imide,

C) 5 to 70 parts by weight of a graft polymer containing

C.1) 5 to 95 percent relative to the weight of the graft polymer of a grafted phase, and

C.2) 5 to 95 percent relative to the weight of the graft polymer of a graft base,

wherein said grafted phase contains a polymerized mixture of

C.1.1) 50 to 99 percent, relative to the weight of said mixture, of at least one member selected from the group consisting of styrene, alpha-methyl styrene, nucleus-substituted styrene, C_{1-8}-alkyl methacrylate and C_{1-8}-alkyl acrylate and

C.1.2) 1 to 50 percent, relative to the weight of said mixture, of at least one polar monomer selected from the group consisting of acrylonitrile, methacrylonitrile, C_{1-8}-alkyl methacrylate, C_{1-8}-alkyl acrylate, maleic anhydride, C_{1-4}-alkyl-N-substituted maleic imide and C_{1-4}-phenyl-N-substituted maleic imide, and

wherein said graft base comprises

C.2) a crosslinked elastomer in particulate form having an average particle diameter (d_{50} value) of 0.05 to 5 micron and a glass transition temperature lower than 10° C.

the sum of the pbw of A, B and C being 100 parts by weight, and

D) 0.5 to 5 parts by weight per one hundred parts of the total A, B and C of a compatibilizing agent comprising a polymeric resin having a number average molecular weight of at least about 21,000, miscible with said grafted phase and containing about 0.05 to 4.0 mole percent, relative to the compatibilizer, of secondary amine reactive groups.

5,910,539

POLYOLEFIN COMPOSITION AND MOLDED ARTICLE THEREOF

Shin-ya Matsunaga, and Hiroshi Wakumoto, both of Yamaguchi, Japan, assignors to Mitsui Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP96/02641, § 371 Date May 6, 1997, § 102(e) Date May 6, 1997, PCT Pub. No. WO97/10299, PCT Pub. Date Mar. 20, 1997

PCT Filed Sep. 13, 1996, Appl. No. 836,291

Claims priority, application Japan, Sep. 14, 1995, 7-236761; Dec. 28, 1995, 7-344108

Int. Cl.[6] C08L *53/00;23/00*

U.S. Cl. 525—88 **7 Claims**

1. A polyolefin composition comprising:

45 to 90 parts by weight of a propylene polymer (A), said propylene polymer (A):

having an intrinsic viscosity η of 0.5 to 10 dl/g (i),

having a temperature (Tm) of at least 100° C. at maximum peak position of an endothermic curve obtained when measured by a differential scanning calorimeter (ii), and

comprising 100 to 80 mol % of units derived from propylene, 0 to 10 mol % of units derived from ethylene and 0 to 15 mol % of units derived from an α-olefin having 4 to 12 carbon atoms (iii);

5 to 40 parts by weight of an ethylene/α-olefin copolymer (B), said ethylene/α-olefin copolymer (B):

having an intrinsic viscosity η of 0.5 to 10 dl/g (i), and

comprising 70 to 95 mol % of units derived from ethylene and 5 to 30 mol % of units derived from an α-olefin having 4 to 12 carbon atoms (ii); and

2 to 25 parts by weight of a propylene/α-olefin/ethylene terpolymer (C), said propylene/α-olefin/ethylene terpolymer (C):

having an intrinsic viscosity η of 0.5 to 10 dl/g (i), and

comprising 40 to 77 mol % of units derived from propylene, 20 to 40 mol % of units derived from an α-olefin having 4 to 12 carbon atoms and 2 to 20 mol % of units derived from ethylene;

provided that the total of components (A), (B) and (C) is 100 parts by weight.

2. A polyolefin composition comprising:

75 to 95 parts by weight of a propylene block copolymer (A'),

said propylene block copolymer (A') comprising: 60 to 90% by weight of a room temperature n-decane insoluble component (A'-1), said room temperature n-decane insoluble component (A'-1).

having an intrinsic viscosity η of 0.5 to 10 dl/g (i),

having a temperature (Tm) of at least 100° C. at maximum peak position of an endothermic curve obtained when measured by a differential scanning calorimeter (ii), and

comprising 100 to 80 mol % of units derived from propylene, 0 to 10 mol % of units derived from ethylene and 0 to 15 mol % of units derived from an α-olefin having 4 to 12 carbon atoms (iii); and 40 to 10% by weight of a room temperature n-decane soluble component (A'-2), said room temperature n-decane soluble component (A'-2):

having an intrinsic viscosity η of 0.5 to 10 dl/g (i), and

comprising 60 to 90 mol % of units derived from propylene and 40 to 10 mol % of units derived from ethylene; and

5 to 25 parts by weight of the propylene/α-olefin/ethylene terpolymer (C) defined in claim **1**,

provided that the total of components (A') and (C) is 100 parts by weight.

5,910,540

THERMOPLASTIC ELASTOMER COMPOSITION AND COMPOSITE MOLDED PRODUCT

Hideki Takahashi, Mie, Japan, assignor to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Oct. 22, 1996, Appl. No. 734,600

Claims priority, application Japan, Nov. 6, 1995, 7-287245

Int. Cl.[6] C08L *53/02;67/02;75/04;77/00*

U.S. Cl. 525—92 B **11 Claims**

1. A thermoplastic elastomer composition, comprising the following components (A) and (B);

component (A) 5 to 95% by weight of a hydrogenated product of a block copolymer comprising block (a) which is made of a polymer of styrene or a derivative thereof, and block (b) which is made of an isoprene homopolymer or a copolymer of isoprene and butadiene, wherein the total amount of the 1,2-bonds and the 3,4-bonds in the isoprene polymer part in block (b) is not less than 40% of the total isoprene bond units;

component (B): 95 to 5% by weight of one or more thermoplastic elastomers which are selected from the group consisting thermoplastic polyester elastomers thermoplastic polyamide elastomers, and thermoplastic polyurethane elastomers, wherein said component (B) has a JIS Shore hardness (A Scale) of not more than 96 according to JIS-K6301, wherein said hydrogenated product has a hydrogenation degree of not less than 95% by weight.

5,910,541

TELECHELIC POLYMERS AND HETEROTELECHELIC POLYDIENE BLOCK POLYMERS WITH DUAL CURE SYSTEMS

David John St. Clair, Houston, and James Robert Erickson, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of application No. 08/631,759, Apr. 12, 1996, Pat. No. 5,721,318, which is a division of application No. 08/519,885, Aug. 28, 1995, Pat. No. 5,576,388, which is a continuation-in-part of application No. 08/320,808, Oct. 11, 1994, abandoned.

This application Sep. 18, 1997, Appl. No. 932,969.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] C08L *53/00;53/02;33/08;67/02*

U.S. Cl. 525—99 **2 Claims**

1. A pressure sensitive adhesive or sealant composition comprising:

(a) from 15 to 95 percent by weight of a hydroxyl-functional telechelic polymer and from 5 to 85 percent by weight of a heterotelechelic polydiene block polymer With hydroxyl functionality and glycidyl ether functionality which does not react significantly with a polyisocyanate at ambient temperature; and

(b) a dual curing system comprising a polyisocyanate which cures the hydroxyl groups of the telechelic and heterotelechelic polymers at ambient temperature and a curing agent selected from the group consisting of a polycarboxylic acid, a polycarboxylic acid anhydride, and a catalyst that cures the glycidyl ether functionality of the heterotelechelic polydiene block polymer upon baking at higher temperature.

5,910,542

ADHESIVES AND SEALANTS BASED ON TELECHELIC POLYMERS AND HETEROTELECHELIC BLOCK POLYMERS WITH DUAL CURE SYSTEMS

David John St. Clair, Houston, and James Robert Erickson, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of application No. 08/654,462, Aug. 16, 1996, Pat. No. 5,804,657, which is a division of application No. 08/519,885, Aug. 28, 1995, Pat. No. 5,576,388, which is a continuation-in-part of application No. 08/320,808, Oct. 11, 1994, abandoned.

This application May 13, 1998, Appl. No. 78,336.

Int. Cl.[6] C08L *9/00;33/14;53/00;53/02*

U.S. Cl. 525—99 **3 Claims**

1. Pressure sensitive structural adhesive and sealant compositions comprising:

(a) a polymer system comprising from 95 to 15 percent by weight of a telechelic polymer and from 5 to 85 percent by weight of a heterotelechelic polydiene block polymer wherein at least one of the functionalities on the heterotelechelic polydiene block polymer is the same as the functionality on the telechelic polymer, and

(b) a dual curing system wherein one element of the curing system cures the telechelic polymer at ambient conditions such that a pressure sensitive adhesive or sealant is formed and the other element cures the heterotelechelic polydiene block polymer upon free radical cure to form a structural adhesive or sealant composition.

5,910,543

THERMOPLASTIC ELASTOMER WITH POLAR AND NON-POLAR RUBBER COMPONENTS

Raman Patel; Sabet Abdou-Sabet, both of Akron, Ohio, and Hsien-Chang Wang, Bellaire, Tex., assignors to Advanced Elastomer Systems, L.P., Akron, Ohio, and Exxon Chemical Patents Inc, Baytown, Tex.

Filed Dec. 18, 1996, Appl. No. 768,543

Int. Cl.[6] C08L *71/10;67/00;77/00*

U.S. Cl. 525—166 **3 Claims**

1. A thermoplastic elastomer composition consisting essentially of

(A) from about 40 to about 70 percent by weight of the total composition of a blend of

(a) from about 25 to about 75 percent by weight of the total of (a)+(b) of a polar rubber selected from the group consisting of acrylic rubber, nitrile rubber, hydrogenated nitrile rubber, a copolymer of an acrylate and ethylene, a terpolymer of ethylene, acrylate and carboxylic acid, or combinations thereof, and

(b) from about 75 to about 25 percent by weight of the total of (a)+(b) of a nonpolar rubber selected from the group consisting of butyl rubber, halogenated butyl rubber, EPDM rubber, a copolymer of isobutylene and C_{1-4} alkyl styrene, or combinations thereof, wherein (a) and (b) are dynamically cured to a degree such that at least about 90 percent of the curable rubber is not extractable in a rubber solvent, with

(B) from about 30 to about 60 percent by weight of the total composition of a high melting thermoplastic polymer selected from the group consisting of nylon, polyester, polyphenylene oxide, or copolymers thereof.

5,910,544

THERMOPLASTIC ELASTOMER COMPOSITION AND PROCESS FOR PRODUCTION THEREOF AND LOW PERMEABILITY HOSE USING THE SAME

Osamu Ozawa; Tetsuji Kawazura; Noriaki Kuroda; Yoshihiro Aoyagi; Jiro Watanabe, and Gou Kawaguchi, all of Kanagawa, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

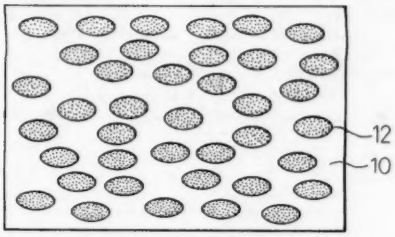
PCT No. PCT/KP96/03215, § 371 Date Jun. 25, 1997, § 102(e) Date Jun. 25, 1997, PCT Pub. No. WO97/16485, PCT Pub. Date May 9, 1997

PCT Filed Nov. 1, 1996, Appl. No. 860,251

Claims priority, application Japan, Nov. 2, 1995, 7-286168; Nov. 21, 1995, 7-303022; Jul. 12, 1996, 8-183683; Jul. 23, 1996, 8-193545; Jul. 23, 1996, 8-210492

Int. Cl.[6] C08F *8/30*

U.S. Cl. 525—178 **20 Claims**



1. A thermoplastic elastomer composition comprising:

i) from 15 to 80 parts by weight of a polyamide thermoplastic resin as component A;

ii) from 20 to 85 parts by weight of a rubber composition as component B, said rubber composition containing a copolymer rubber composed of a copolymer of a C_4 to C_7 isomonoolefin and a p-alkylstyrene, where at least a part of the p-alkylstyrene unit portions thereof have a halogen atom; and

iii) a cross-linking agent,

wherein component A forms a continuous phase and at least part of component B is dispersed in component A as a dispersed phase and at least part of the dispersed phase is cross-linked by the cross-linking agent.

5,910,545

BIODEGRADABLE THERMOPLASTIC COMPOSITION

Fu-Jya Tsai, and Brian T. Etzel, both of Appleton, Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Oct. 31, 1997, Appl. No. 962,432

Int. Cl.[6] C08L *77/00;* **C08F** *20/00*

U.S. Cl. 525—178 **12 Claims**

1. A thermoplastic composition blend comprising:

a. a poly(lactic acid) polymer in a weight amount that is greater than 0 but less than 100 weight percent,

b. a polymer selected from the group consisting of a polybutylene succinate polymer, a polybutylene succinate adipate polymer, and a mixture of such polymers, in a weight amount that is greater than 0 but less than 100 weight percent,

c. a wetting agent, which exhibits a hydrophilic-lipophilic balance ratio that is between about 10 to about 40, in a weight amount that is greater than 0 to about 15 weight percent, wherein all weight percents are based on the total weight amount of the poly(lactic acid) polymer; the polymer selected from the group consisting of a polybutylene succinate polymer, a polybutylene succinate adipate polymer, and a mixture of such polymers; and the wetting agent present in the thermoplastic composition,

wherein the poly(lactic acid) polymer, the polymer selected from the group consisting of a polybutylene succinate polymer, a polybutylene succinate adipate polymer, and a mixture of such polymers, and the wetting agent are substantially unreacted with each other.

5,910,546

TAPERED BLOCK COPOLYMERS OF MONIVINYLARENES AND CONJUGATED DIENES

William J. Trepka; George A. Moczygemba; Nathan E. Stacy, and Ralph C. Farrar, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of application No. 08/605,659, Feb. 22, 1996, abandoned, which is a continuation of application No. 08/153,408, Nov. 15, 1993, abandoned. This application Nov. 4, 1997, Appl. No. 963,964.

Int. Cl.[6] C08F *297/04*

U.S. Cl. 525—314 **21 Claims**

1. A method of preparing a polymodal composition wherein said polymodal composition comprises

coupled tapered block copolymers, where said coupled tapered block copolymers consist of

S-S-B/S-x-S/B-S-S,

S-B/S-x-S/B-S, and

S-S-B/S-x-S/B-S copolymers, and where said coupled tapered block copolymers are substantially the only coupled tapered block copolymers in said polymodal composition said method comprises:

(a) charging a monovinylaromatic monomer and an initiator and in the presence of a randomizer, allowing polymerization to occur until essentially no free monomer is present, to produce and S-Li block; thereafter

(b) charging an initiator and a monovinylaromatic monomer, and allowing polymerization to occur until essentially no free monomer is present, to produce S-S-Li and S-Li blocks; thereafter

(c) charging a mixture of monovinylaromatic monomer and conjugated diene monomer, and allowing polymerization to occur until essentially no free monomer is present, to produce S-S-B/S-Li and S-B/S-Li blocks; thereafter

(d) charging the reaction mixture with a coupling agent to form said coupled tapered block copolymers

wherein

S=monovinylaromatic block

B=conjugated diene block

B/S=tapered block of conjugated diene/monovinylaromatic compound

Li=living polymer site or coupling site and

x=coupling agent.

5,910,547

PROTECTED FUNCTIONALIZED HETEROTELECHELIC POLYMERS AND PROCESSES FOR PREPARING THE SAME

James Anthony Schwindeman, Lincolnton, N.C.; Roderic Paul Quirk, Akron, Ohio, and Conrad William Kamienski, deceased, late of Gastonia, N.C., by Diane Buschke Kamienski, executrix, assignors to FMC Corporation, Philadelphia, Pa.

Provisional application No. 60/021,906, Jul. 17, 1996. This application Jul. 16, 1997, Appl. No. 893,951.

Int. Cl.[6] C08F *8/22*

U.S. Cl. 525—332.8 **15 Claims**

1. A heterotelechelic polymer comprising the structure:

$$(R^1R^2R^3A—)_m—T—Z—Q_n—C—Y—W—(B—R^4R^5R^6)_k$$

wherein:

C is a hydrogenated or unsaturated block derived by anionic polymerization of at least one monomer selected from the group consisting of conjugated diene hydrocarbons, alkenyl-substituted aromatic hydrocarbons and mixtures thereof;

Y and Z are independently branched or straight chain hydrocarbon connecting groups containing 3–25 carbon atoms optionally substituted with aryl or substituted aryl containing lower alkyl, lower alkylthio, or lower dialkylamino groups;

Q is an unsaturated hydrocarbyl group derived by incorporation of at least one compound selected from the group consisting

of conjugated diene hydrocarbons, alkenylsubstituted aromatic hydrocarbons, and mixtures thereof;

T and W are independently selected from oxygen, sulfur, and nitrogen;

$(A—R^1R^2R^3)_m$ and $(B—R^4R^5R^6)_k$ are protecting groups in which A and B are independently selected from elements of Group IVa of the Periodic Table of the Elements; R^1, R^2, R^3, R^4, R^5 and R^6 are independently defined as hydrogen, alkyl, substituted alkyl groups containing lower alkyl, lower alkylthio, and lower dialkylamino groups, aryl or substituted aryl groups containing lower alkyl, lower alkylthio, lower dialkylamino groups, or cycloalkyl and substituted cycloalkyl groups containing 5 to 12 carbon atoms; and k and m are 1 when T or W is oxygen or sulfur, and 2 when T or W is nitrogen; and

n is an integer from 0 to 5;

with the proviso that $—T—(A—R^1R^2R^3)_m$ and $W—(B—R^4R^5R^6)_k$ are not the same.

5,910,548

PROCESS FOR PRODUCING MODIFIED EPOXY RESIN, MODIFIED EPOXY RESIN PRODUCED, AND EPOXY RESIN COMPOSITION THEREOF

Yasuyuki Murata; Norio Tohriiwa, and Yoshinori Nakanishi, all of Yokkaichi, Japan, assignors to Shell Oil Company, Houston, Tex.

Continuation of application No. 08/430,524, Apr. 27, 1995, abandoned. This application Jul. 22, 1997, Appl. No. 898,021. Claims priority, application Japan, Apr. 27, 1994, 6-110232

Int. Cl.[6] C08F *20/00*

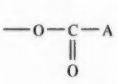
U.S. Cl. 525—438 **9 Claims**

1. An epoxy resin composition comprising:

a modified epoxy resin produced by the process of (i) reacting:

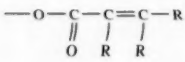
(a) an epoxy resin having at least at least at least two epoxy groups per one molecule, and (b) an active ester group-containing compound having at least two aromatic ring-bonded active ester groups, said active ester groups are represented by the following chemical formula (1) or (2):

(1)



wherein A represents a phenyl group or naphthyl group;

(2)



wherein R each independently is a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, a phenyl group, an aralkyl group, an alkoxy group, or a halogen atom, in proportions such that the amount of the active ester group in the active ester group-containing compound is from about 0.1 to about 0.7 mol per mole of the epoxy group *in the epoxy resin thereby producing the* modified epoxy resin, and (ii) recovering the modified epoxy resin; and

a curing agent for the epoxy resin wherein the curing agent comprises phenol, phenol resin, a polyhydric phenol, an acid anhydride and/or an amine reactive with the modified epoxy resin.

5,910,549

METHOD FOR PREPARATION OF ALKOXYAMINES FROM NITROXYL RADICALS

Krzysztof Matyjaszewski, and Dorota Greszta, both of Pittsburgh, Pa., assignors to Carnegie-Mellon University, Pittsburgh, Pa.

Filed Aug. 22, 1996, Appl. No. 701,437

Int. Cl.[6] C08F *2/00*

U.S. Cl. 526—217 **6 Claims**

1. A method for producing an alkoxyarine comprising:

reacting a compound having one or more radically transferrable atoms or groups with a transition metal or transition metal compound, in the presence of a stable nitroxide radical.

5,910,550

PREPARATION OF MEDIUM MOLECULAR WEIGHT, HIGHLY REACTIVE POLYISOBUTENE

Hans Peter Rath, Grünstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 6, 1997, Appl. No. 851,351

Claims priority, application Germany, May 13, 1996, 196 19 267

Int. Cl.[6] C08F *4/14;110/10*

U.S. Cl. 526—237 **6 Claims**

1. A process for the preparation of medium molecular weight, highly reactive polyisobutene having an average molecular weight M_n of more than 5000 and up to 80,000 dalton and containing at least 50 mol % of terminal double bonds by cationic polymerization of isobutene or an isobutene-containing hydrocarbon mixture in the liquid phase in the presence of a boron trifluoride complex catalyst at below 0° C. and from 0.5 to 20 bar, wherein the polymerization is carried out in one stage at a steady-state isobutene concentration of from 20 to 80% by weight and a boron trifluoride concentration of from 50 to 500 ppm.

5,910,551

POLYMERIZABLE CYCLODEXTRIN DERIVATIVES

Rafael L. Bowen, Gaithersburg, Md., assignor to American Dental Association Health Foundation, Chicago, Ill.

Division of application No. 08/779,276, Jan. 6, 1997, Pat. No. 5,792,821. This application Nov. 24, 1997, Appl. No. 979,441.

Int. Cl.[6] C08F *224/00*

U.S. Cl. 526—238.2 **1 Claim**

1. A method for preparing a polymerized cyclodextrin library *comprising:*

(a) reacting β-cyclodextrin with a sufficient number of moles of one or more compounds selected from the group consisting of methacrylic acid chloride, acrylic acid chloride, methacrylic anhydride, acrylic anhydride, maleic anhydride, itaconic anhydride, glycidyl methacrylate, glycidyl acrylate, 2-isocyanatoethylmethacrylate, 2-isocyanatoethylacrylate, 2-halo-ethyl methacrylate, 2-halo-ethyl acrylate, 4-vinylbenzylchloride, 4-vinylbenzylbromide, and other *reagents that can attach polymerizable groups to hydroxyl* groups per mole of β-cyclodextrin and *with a sufficient* number of moles of cyclic anhydride per mole of β-cyclodextrin,

(b) conducting the reaction(s) of step (a) in the presence of one or more amine(s) selected from the group consisting of ethyl-4-dimethylaminobenzoate, 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU), 4-(dimethylamino)pyridine, hexamethylenetetramine (methenamine), N,N-dimethyl-p-toluidine, N,N-dimethyl-3,5-dimethylaniline, 4-tert-butyl-N,N-*dimethylaniline*, N,N-dimethylglycine, N-alkylated imidazoles, triphenylamine, other tertiary amines, triphenyl phosphine, triphenyl antimony, N,N-*dimethylaminoethylmethacrylate*, N,N-diethylaminoethylmethacrylate, 4-vinylpyridine, 2-vinylpyridine, 1-vinylimidazole, N-vinylformamide, 1-vinyl-2-pyrrolidinone and in the presence of at least one stabilizing polymerization inhibitor,

(c) reducing the viscosity of the reaction product(s) from steps (a) and (b) with one or more low-viscosity monomer(s) selected from the group consisting of triethylene glycol dimethacrylate; 2-hydroxyethyl methacrylate; cyclohexyl methacrylate; benzyl methacrylate; methyl methacrylate; glycerol dimethacrylate; polyethylene glycol 400 dimethacrylate; polyethylene glycol 600 dimethacrylate; polyethylene glycol 400 diacrylate; PEG 1,000 dimethacrylate; polypropylene glycol dimethacrylate; triethylene glycol diacrylate; diethylene glycol diacrylate; diethylene glycol dimethacrylate; ethylene glycol diacrylate; ethylene glycol dimethacrylate; water-miscible, low-viscosity liquid dimethacrylates and diacrylates; divinyl reaction products of 4,8-bis(hydroxymethyl)tricyclo[5.2.1.$0^{2,6}$]decane with one or more members selected from the group consisting of methacrylic anhydride, methacryloyl chloride, acryloyl chloride, and acrylic anhydride; the divinyl condensation reaction products of 1,4-dimethylolcyclohexane with members selected from the group consisting of methacrylic anhydride, methacryloyl chloride, acryloyl chloride, and/or acrylic anhydride; styrene; divinylbenzene, and other compatible comonomers,

(d) combining with the product(s) of step (c) one or more polymerization initiators, and

(e) activating the polymerization initiator(s) to form a polymerized cyclodextrin library.

5,910,552

FLUORINE-CONTAINING COPOLYMER ELASTOMER PROCESS FOR PRODUCING THE SAME AND COMPOSITION CONTAINING THE SAME

Satoru Saito, Kitaibaraki, and Haruyoshi Tatsu, Hitachi, both of Japan, assignors to Nippon Mektron, Limited, Tokyo, Japan

Filed Mar. 14, 1997, Appl. No. **818,819**
Claims priority, application Japan, Apr. 24, 1996, 8-127863
Int. Cl.[6] C08F 16/24
U.S. Cl. 526—247 **5 Claims**

1. A fluorine-containing copolymer elastomer, which comprises about 45 to about 80% by mole of tetrafluoroethylene, about 50 to about 20% by mole of a perfluoro(vinylether) represented by the following general formula:

$$CF_2{=}CFO(CF_2)_2(OCF_2)nOCF_3$$

where n is an integer of 1 to 5, and about 0.2 to about 5% by mole of a bromine-containing unsaturated monomer compound, sum total being 100% by mole.

5,910,553

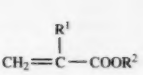
PREPARATION OF RUBBER-MODIFIED MOLDING MATERIALS BY MEANS OF GROUPS WHICH ARE INCORPORATED IN THE RUBBER AND FORM FREE RADICALS ON THERMAL DECOMPOSITION

***Graham Edmund McKee, Neustadt; Rainer Moors, Germersheim;* Hermann Gausepohl, Mutterstadt, and Joachim Seibring, Freinsheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany**

PCT No. PCT/EP95/04474, § 371 Date May 12, 1997, § 102(e) Date May 12, 1997, PCT Pub. No. WO96/15166, PCT Pub. Date May 23, 1996
PCT Filed Nov. 14, 1995, Appl. No. 836,309
Claims priority, application Germany, Nov. 14, 1994, 44 40 675
Int. Cl.[6] C08F *118/02*
U.S. Cl. 526—319 **14 Claims**

1. A process for the preparation of a rubber-modified molding material, which comprises

i) in a first stage, polymerizing a first mixture (A) comprising at least one alkyl acrylate or methacrylate (a) of the formula (I)



(I)

wherein R^1 is hydrogen or methyl and R^2 is alkyl of 1 to 32 carbon atoms,

at least one first monomer (b) which contains a diazo group or a C—C double bond which is sensitive to thermal decomposition, or which monomer (b) is tert.-butyl 3-isopropenylcumyl peroxide or tert.-butyl peroxycrotonate, and

optionally a second monomer (c) or a plurality thereof to give a rubber (B),

ii) in a second stage, mixing the rubber (B) with a third monomer (d) or a plurality thereof, to form a second mixture (C), and

iii) in a third stage, polymerizing the second mixture (C) with free radicals to give the rubber-modified molding material (D), the polymerization being carried out either continuously as a solution or mass polymerization or being continued as a suspension polymerization after conversion of at least 15%, the rubber-modified molding material (D) containing from 1 to 60% by weight of the rubber (B), and the rubber (B) in grafted form being present in the rubber-modified molding material (D) as particles having a diameter of from 0.1 to 20 μm.

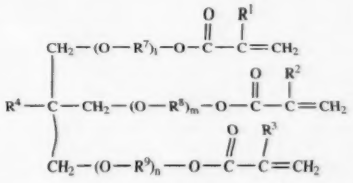
5,910,554

HIGHLY CROSS-LINKED POLYMERIC SUPPORTS

Maria Kempe, Lund, Sweden, and George Barany, Falcon Heights, Minn., assignors to Regents Of The University Of Minnesota, Minneapolis, Minn.

PCT No. PCT/US96/10291, § 371 Date Jun. 6, 1997, § 102(e) Date Jun. 6, 1997, PCT Pub. No. WO97/00273, PCT Pub. Date Jan. 3, 1997
Continuation-in-part of application No. 08/491,474, Jun. 16, 1995, Pat. No. 5,656,707. This PCT application Jun. 14, 1996, Appl. No. 793,212.
This patent is subject to a terminal disclaimer.
Int. Cl.[6] C08F *18/00*
U.S. Cl. 526—320 **24 Claims**

1. A polymer prepared from a composition comprising a multifunctional (meth)acrylate crosslinker of the following formula (I):



(I)

wherein:

(a) R^1, R^2, and R^3 are each independently hydrogen or a methyl group;

(b) R^4 is hydrogen or an organic group or substituent that can interact in the polymerization and/or crosslinking process or is nonreactive under the conditions of the polymerization and/or crosslinking process;

(c) R^7, R^8, and R^9 are each independently —CH_2—CH_2—, —CH_2—CH_2—CH_2—, CH_2—$CH(CH_3)$—, or —$CH(CH_3)$—CH_2—; and

(d) each of l, m, and n is no greater than about 100 with the proviso that at least one of l, m, or n is at least 1.

5,910,555

CURABLE RESIN COMPOSITION WITH IMPROVED *ADHESION OF COATINGS*

Kazuhiko Ueda, Kobe; Jun Kotani; Ayako Yano, both of Kakogawa, and Toshifumi Hirose, Kobe, all of Japan, assignors to Kaneka Corporation, Osaka, Japan

Filed May 14, 1997, Appl. No. 856,078

Claims priority, application Japan, May 22, 1996, 7-127135; May 16, 1996, 7-121882

Int. Cl.[6] C08G *77/26*

U.S. Cl. 528—34 **15 Claims**

1. A curable resin composition comprising:

(a) an oxyalkylene polymer having at least one silicon-containing reactive group in a molecule, and

(b) at least one compound selected from the group consisting of (b-1) a compound having at least one amino group and at least one trialkylsiloxy group in a molecule and (b-2) a silylamine having at least one group which has at least one group selected from the group consisting of a hydroxyl group, a hydrogen atom, a halogen atom, an alkoxy group, an acyloxy group, a ketoxymate group, an aminoxy group, a mercapto group, and alkenyloxy group bonded to the silicon atom and can be crosslinked through the formation of a siloxane bond.

5,910,556

DISPERSING AGENTS FOR AQUEOUS COATINGS COMPOSITIONS

Christian Wamprecht, Neuss; Oswald Wilmes, Köln; Stephan Kirchmeyer, Leverkusen, and Jan Mazanek, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 20, 1997, Appl. No. 915,184

Claims priority, application Germany, Aug. 30, 1996, 196 35 065

Int. Cl.[6] C08G *18/48*

U.S. Cl. 528—49 **3 Claims**

1. A process for the solvent-free production of a polyisocyanate addition product, which is suitable as a dispersing agent for incorporating solids into aqueous coating compositions, wherein the polyisocyanate addition product has a maximum content of 1.0% by weight of isocyanate groups and a content of 30 to 95% by weight of ethylene oxide units (molecular weight =44) present in the polyether chains of monofunctional alcohol B), which comprises reacting

A) a polyisocyanate component having an average NCO functionality of 1.7 to 2.5 and an NCO content of 10 to 65% by weight with one or more of the following components:

B) an amount up to 75 equivalent %, based on the isocyanate groups of A), which is sufficient to obtain said content of ethylene oxide units, of a monohydric alcohol component containing one or more monohydric polyether alcohols, which have a number average molecular weight of 150 to 5000 and an ethylene oxide content of 40 to 99.5% by weight, and are produced by the alkoxylation of a monovalent starter molecule, wherein the alkoxylation product may optionally be modified, subsequent to alkoxylation, by an addition reaction with up to 40% by weight, based on the weight of the alkoxylation product, of ε-caprolactam,

C) 0 to 75% by weight, based on the isocyanate groups of A), of a monohydric alcohol component containing one or more monohydric alcohols having a number average molecular weight of 32 to 5000, which are different from the alcohols of component B),

D) 0 to 35 equivalent %, based on the isocyanate groups of A), of an amine component which contains at least one tertiary amine having a molecular weight of 88 to 250 and which contains one isocyanate-reactive group and

E) 0 to 65 equivalent %, based on the isocyanate groups of A), of a compound having a number average molecular weight of 32 to 5000 and at least two isocyanate-reactive groups, at an NCO index of 100 to 600 to form urethane and optionally urea groups, and simultaneously or subsequently reacting any unreacted isocyanate groups by a secondary reaction until the isocyanate group content is ≦1.0% by weight, wherein said secondary reaction is a trimerization reaction and is not optional.

5,910,557

FLUOROCHEMICAL POLYURETHANES, PROVIDING GOOD LAUNDRY AIR-DRY PERFORMANCE

Frans A. Audenaert, Kaprijke; Kathy E.M.L.A. Allewaert, Haacht; Gert Hooftman, Tielrode, all of Belgium; Makoto Nagase, Tokyo, Japan, and Hugo R. Lens, Boechout, Belgium, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 12, 1997, Appl. No. 855,803

Claims priority, application European Pat. Off., May 17, 1996, 96107909

Int. Cl.[6] C08G *18/62*

U.S. Cl. 528—70 ***61 Claims***

1. A fluorochemical composition derived from the reaction of the following compounds:

(a) at least one fluorochemical oligomer represented by the formula:

$$M^f_m M^h_l\text{-}T H$$

wherein:

M^f is an organic residue derived from a fluorochemical monomer and such residues may be the same or different,

M^h is an organic residue derived from a fluorine-free monomer and such residues may be the same or different,

m is a number from 2 to 40, inclusive,

l is a number from 0 to 20, inclusive,

T is an organic linking group obtained by removing a hydrogen atom from a chain transfer agent that contains only two functional groups selected from the group consisting of hydroxy, amino and mercapto functional groups;

(b) At least one isocyanate represented by the formula:

$$A(NCO)_x$$

wherein:

A is an organic, di-, tri- or tetravalent residue; and

X is a number from 2 to 4, inclusive;

(c) at least one bifunctional, active hydrogen compound represented by the formula:

$$HX\text{-}B\text{-}XH$$

wherein:

B is a divalent organic residue, and

X is O, NH or S; and

(d) at least one isocyanate masking agent.

5,910,558

MICROPOWDERS

Michael Schoenherr, Frankenthal; Juergen Ahlers, Gross-Rohrheim, and Hermann Buchert, Bad Duerkheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of application No. 08/693,563, Aug. 7, 1996, abandoned, and a continuation of application No. 08/454,147, filed as application No. PCT/EP94/00007, Jan. 4, 1994, abandoned. This application Jul. 21, 1997, Appl. No. 897,686.

Claims priority, application Germany, Jan. 8, 1993, P 43 00 326; Jan. 21, 1993, P 43 01 543

Int. Cl.[6] C08G *8/02;75/20;* **C08K** *7/16*

U.S. Cl. 528—125 **19 Claims**

1. A micropowder having spherical particles possessing an virtually poreless surface structure, said particles consisting essentially of a polyarylene ether sulfone or polyarylene ether ketone, and have a particle density which essentially corresponds to that of

the polyarylene ether sulfone or polyarylene ether ketone, obtainable by prilling the melt thereof or spray-drying a solution thereof and wherein the polyarylene ether sulfone or polyarylene ether ketone have a number average molecular weight M_n from 15,000 to 60,000 g/mol and a relative viscosity of from 0.25 to 0.95 dl/g as measured either in 1% strength by weight N-methylpyrrolidone solution, in a mixture of phenol and dichloromethane or in 96% strength sulfuric acid, in each case at 20° C. and 25° C. wherein the average particle diameter of said particles is from 2 to 70 μm.

5,910,559

FRACTIONATED NOVOLAK RESIN FROM CRESOL-FORMALDEHYDE REACTION MIXTURE AND PHOTORESIST COMPOSITION THEREFROM

M. Dalil Rahman, Flemington; Ping-Hung Lu, Bridgewater, and Michelle Cook, Somerville, all of N.J., assignors to Clariant Finance (BVI) Limited, Virgin Islands (Br.)

Filed Dec. 18, 1996, Appl. No. 768,541

Int. Cl.[6] **C08G** *8/10*

U.S. Cl. 528—137 **4 Claims**

1. A method for producing a film forming novolak resin which comprises:

a) condensing formaldehyde with one or more phenolic compounds, in the presence of an acid catalyst and a reaction solvent, the reaction solvent being a photoresist solvent, and thereby producing a novolak resin polymeric condensation product;

b) adding water to the reaction mixture and thereby forming two solution layers, a top layer comprising a solution of unreacted phenolic compounds, and novolak oligomers and monomers in water and a bottom layer comprising a solution of the remaining reaction mixture in reaction solvent, and removing the top layer;

c) adding a water soluble organic polar solvent and water to the remaining bottom solution layer, in the ratio of water soluble organic polar solvent:water ratio of 5:95 to 95:5, and thereby again forming two solution layers, a bottom layer comprising a solution of the novolak resin condensation product in reaction solvent and a top layer comprising a solution of low molecular weight novolak, novolak oligomers and novolak monomer in a solvent comprising water/water soluble organic polar solvent/reaction solvent, and removing the top layer;

d) repeating steps b) and c) 2 to 10 times for the bottom layer remaining after step c);

e) diluting the remaining novolak resin solution with a solvent comprising the reaction solvent and removing any remaining water and water soluble organic polar solvent, and thereby producing a film forming, fractionated novolak resin.

5,910,560

THERMOPLASTIC RESIN COMPOSITION AND MOLDED ARTICLE

Tohru Nagashima; Hiroshi Nakamura, both of Ibaraki; Hideo Nomura, Chiba, and Mituo Maeda, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

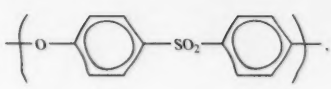
Filed Nov. 26, 1997, Appl. No. 979,560

Claims priority, application Japan, Nov. 29, 1996, 8-320476; Apr. 11, 1997, 9-093666; Sep. 19, 1997, 9-254621

Int. Cl.[6] **C08G** *64/00*

U.S. Cl. 528—196 **11 Claims**

1. A thermoplastic resin composition comprising 15 to 55% by weight of an aromatic polycarbonate resin, and 85 to 45% by weight of an aromatic polysulfone resin having the repeating unit represented by the following formula in an amount of not less than 80 mol %:



wherein the ratio (ηa/ηb) of the melt viscosity (ηa) of the aromatic polycarbonate resin to the melt viscosity (ηb) of the aromatic polysulfone resin defined below is 0.5 to 2.0;

wherein (ηa) is the melt viscosity of the aromatic polycarbonate resin measured at a temperature of 340° C. and a shear rate of 1216/second; and

wherein (ηb) is the melt viscosity of the aromatic polysulfone resin measured at a temperature of 340° C. and a shear rate of 1216/second.

5,910,561

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR AND AROMATIC POLYCARBONATE RESIN FOR USE THEREIN

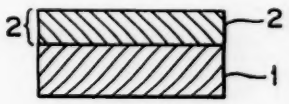
Chihaya Adachi, Ueda; Masaomi Sasaki, Susono; Kazukiyo Nagai, Numazu; Tomoyuki Shimada; Chiaki Tanaka, both of Shizuoka-ken; Nozomu Tamoto, Numazu; Akira Katayama, *Shizuoka-ken; Mitsutoshi Anzai, Kawasaki; Akihiro Imai,* Kawasaki, and Katsuhiro Morooka, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, and Hodogaya Chemical Co., Ltd., Kawasaki, both of Japan

Division of application No. 08/770,684, Dec. 19, 1996, Pat. No. 5,846,680. This application May 26, 1998, Appl. No. 84,100.

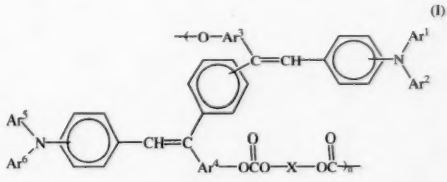
Claims priority, application Japan, Dec. 19, 1995, 7-330479; Jan. 23, 1996, 8-009408; Jan. 30, 1996, 8-014098; Dec. 6, 1996, 8-336002; Dec. 18, 1996, 8-338295

Int. Cl.[6] **C08G** *64/00*

U.S. Cl. 528—196 **22 Claims**

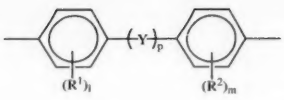


1. An aromatic polycarbonate resin having a repeat unit of formula (I):

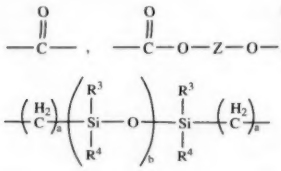


(I)

wherein n is an integer of 5 to 5000; Ar^3 and Ar^4 may be the same or different, and represent a bivalent aromatic hydrocarbon group which may have a substituent or a bivalent heterocyclic group which may have a substituent; Ar^1, Ar^2, Ar^5 and Ar^6 each may be the same or different, and represent an aromatic hydrocarbon group which may have a substituent, or a heterocyclic group which may have a substituent; and X is a bivalent aliphatic group, a bivalent cyclic aliphatic group, or



in which R^1 and R^2 are each independently an alkyl group which may have a substituent, an aromatic hydrocarbon group which may have a substituent, or a halogen atom; l and m are each independently an integer of 0 to 4; and p is an integer of 0 or 1, and when p=1, Y is a straight-chain, branched or cyclic alkylene group having 1 to 12 carbon atoms, —O—, —S—, —SO—, —SO_2—,



in which Z is a bivalent aliphatic hydrocarbon group; a is an integer of 0 to 20; b is an integer of 1 to 2000; and R^3 and R^4 are each independently an alkyl group which may have a substituent or an aromatic hydrocarbon group which may have a substituent.

5,910,562

COPOLYCARBONATE RESIN AND RESIN COMPOSITION COMPRISING THE SAME

Mitsuo Miura; Osamu Kondo; Takayasu Fujimori, and Yoshinori Isahaya, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 17, 1997, Appl. No. 953,526

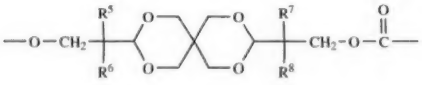
Claims priority, application Japan, Oct. 18, 1996, 8-276260; Feb. 6, 1997, 9-023902; Feb. 6, 1997, 9-023903; Mar. 12, 1997, 9-057727

Int. Cl.[6] C08G *64/00*

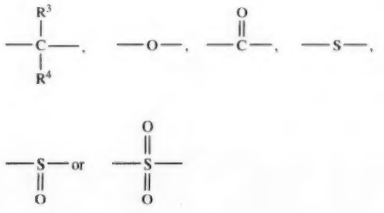
U.S. Cl. 528—201 **18 Claims**

1. A copolycarbonate resin comprising, as structural units, a unit represented by the general formula (1):

(2)

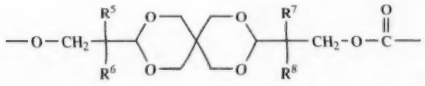


wherein X is



wherein R^3 and R^4 each are independently a hydrogen atom, an alkyl group having 1 to 10 carbon atoms or a phenyl group or R^3 and R^4 may be coupled to form a ring, R^1 and R^2 each are independently a hydrogen atom, an alkyl group having 1 to 10 carbon atoms or a halogen atom, and m and n each are independently an integer of 0 to 4 representing a number of substituent groups, and a unit represented by the general formula (2):

(2)



wherein R^5, R^6, R^7 and R^8 each are independently a hydrogen atom or a monovalent alkyl group having 1 to 10 carbon atoms, and wherein a molar ratio of the unit represented by the general formula (1) to the unit represented by the general formula (2) is 90/10 to 10/90.

5,910,563

WATER THINNED POLYMERIC VEHICLE FOR COATING COMPOSITIONS WITH LOW AMOUNTS OF VOLATILE ORGANIC COMPOUNDS

Frank N. Jones, Ann Arbor, Mich.; Shou-Kuan Fu, Shanghai, China; Wen Jing, Valencia, Calif.; Suru Zhang, Highland Park, N.J., and Vijay Swarup, Houston, Tex., assignors to Exxon Chemical Patents, Inc., Baytown, Tex.

Continuation of application No. 08/737,720, filed as application No. PCT/US96/00852, Jan. 24, 1996, abandoned, which is a continuation-in-part of application No. 08/484,640, Jun. 7, 1995, Pat. No. 5,610,263, which is a continuation-in-part of application No. 08/378,042, Jan. 24, 1995, abandoned, which is a continuation-in-part of application No. 08/186,429, Jan. 25, 1994, abandoned, and application No. 08/186,430, Jan. 25, 1994, abandoned. This application Nov. 10, 1997, Appl. No. 967,762.

Int. Cl.[6] C08G *64/00*

U.S. Cl. 528—272 **53 Claims**

1. A polymeric vehicle effective for providing a formulated coating composition having less than about three weight percent organic solvent and which formulated coating composition includes at least about 3 weight percent water, the polymeric vehicle comprising:

an oligoester diol having a polydispersity index of less than about 2.6; and

a hardening carbamate crosslinker selected from the group consisting of a polyisocyanate, polyfunctional biuret, blocked polyisocyanate, blocked polyfunctional biuret, a carbamate polyol and mixtures thereof; and

an additional hardener having at least two hydroxyl groups and which additional hardener reacts with the hardening carbamate crosslinker or an amino resin, the hardening carbamate crosslinker reactive with the oligoester diol or reactive with an additional crosslinker which is reactive with the oligoester diol, the hardening carbamate crosslinker not reactive with water, the oligoester diol having a molecular weight and structure effective for providing a liquid formulated coating composition when combined with at least about three weight percent water and not more than about three weight percent organic solvent, the hardening carbamate crosslinker, the additional hardener and oligoester diol in relative amounts effective for permitting the formulated coating composition to imbibe at least about 3 weight percent water, based upon the weight of the formulated coating composition, to provide a water thinned formulated coating composition with a viscosity of less than about 1.5 Pa.s at about 20° C. to about 60° C. at a shear rate of about 3 $sec.^{-1}$, the polymeric vehicle

effective for providing a coating binder having a hardness of at least about H when applied to and thermoset on a substrate at a thickness of one mil dry.

5,910,564

POLYAMINO ACID ESTER COPOLYMERS

Burghard Grüning; Harald Rau; Jörg Simpelkamp, and Christian Weitemeyer, all of Essen, Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Filed Dec. 6, 1996, Appl. No. 761,637

Claims priority, application Germany, Dec. 7, 1995, 195 45 678

Int. Cl.[6] C08G *69/08*

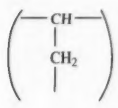
U.S. Cl. 528—310 **10 Claims**

1. A copolymer derived from polyaspartic acids, wherein at least 75% of the units present are selected from the group consisting of structural units having the general formula (I) and (II)

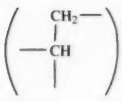
(—NH—A(—COOR[1])—C(O)—) (I)

(—NH—B—C(O)—) (II)

in which each structural element A is the same or different and each is a trifunctional hydrocarbon radical with 2 C atoms having the structure (A1) or (A2),



(A1)



(A2)

wherein said copolymer contains at least three units having said formula (I), in which

each R^1 can have the meaning of R^2, R^3 or R^4, where

R^2 represents one or more residues selected from the group consisting of alkali metals, alkaline earth metals, hydrogen, and ammonium of the formula $(NR^5R^6R^7R^8)^+$, where R^5–R^8 represent, independently of each other, hydrogen, alkyl or hydroxyalkyl,

R^3 represents identical or different, straight or branched, saturated or unsaturated alkyl residues R^9 with 6–24 C atoms or radicals having the structure —X—R^9, where X represents an oligo- or polyoxyalkylene chain with 1–100 oxyalkylene units,

R^4 represents identical or different, straight or branched, saturated or unsaturated alkyl residues with 1–5 C atoms,

and in each case at least one residue R^1 must have the meaning of R^2 and at least one residue R^1 must have the meaning of R^3 or R^4; and

each unit (—NH—B—C(O)—) is a residue selected from the group consisting of protein-forming and nonprotein-forming amino acids, and the units (—NH—B—C(O)—) constitute not more than 20 wt %. of the copolymer.

5,910,565

OLIGOGLYCINE COMPOUND, FIBROUS MICROTUBE OF OLIGOGLYCINE COMPOUND AND PROCESS OF PRODUCING FIBROUS MICROTUBE

Toshimi Shimizu; Masaki Kogiso, both of Tsukuba, and Mitsutoshi Masuda, Matsudo, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Japan

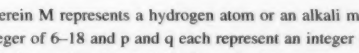
Division of application No. 08/916,375, Aug. 22, 1997, Pat. No. 5,876,748. This application Nov. 3, 1998, Appl. No. 184,632.

Claims priority, application Japan, Aug. 29, 1996, 8-227974

Int. Cl.[6] C08G *69/10;69/26*

U.S. Cl. 528—328 **2 Claims**

1. A lipid represented by the following formula:



MO—(CO—CH_2—NH)$_p$—CO—(CH_2)$_n$—CO—(NH—CH_2—CO)$_q$—OM

wherein M represents a hydrogen atom or an alkali metal, n is an integer of 6–18 and p and q each represent an integer of at least 1 with the proviso that a total of p and q is not greater than 6.

5,910,566

LIVING POLYMER HYDROGENATION CATALYST AND PROCESS FOR HYDROGENATING POLYMERS WITH THE CATALYST

Young Hoon Ko; Jae Yun Kim, and Jin Man Hwang, all of Taejeon, Rep. of Korea, assignors to Korea Kumho Petrochemical Co., Ltd., Seoul, Rep. of Korea

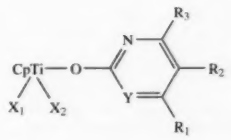
Filed Jan. 26, 1998, Appl. No. 13,230

Claims priority, application Rep. of Korea, Jul. 24, 1997, 97-34736

Int. Cl.[6] B01J *31/00;27/24;23/00*

U.S. Cl. 528—480 **7 Claims**

1. A process for the hydrogenation of conjugated diene polymer in an inert organic solvent, said polymer being obtained by polymerization or copolymerization of a conjugated diene, which comprise effecting selective hydrogenation of unsaturated double bonds in the conjugated diene units of said conjugated diene polymer in the presence of catalyst represented by the following formula (I)



(I)

wherein

Cp is cyclopentadienyl (C_5H_5—);

X_1 and X_2 are each independently a hologen atom;

Y is carbon or nitrogen atom; and

R_1, R_2 and R_3 are each independently hydrogen atom or C_1–C_4 lower alkyls.

5,910,567

PROCESS FOR PREPARING DEPROTEINIZED NATURAL RUBBER LATEX MOLDING AND DEPROTEINIZING AGENT FOR NATURAL RUBBER LATEX

Yasuyuki Tanaka, Tokyo; Shinichi Nakade, Hyogo; Atsuko Ochi, Hyogo; Toshiaki Sakaki, Hyogo; Masaharu Hayashi, Wakayama; Kazuhiro Sekiguchi, Tokyo; Akihito Kuga, Tokyo, and Eiji Kanamaru, Tokyo, all of Japan, assignors to Fuji Latex Co., Ltd., Tokyo; Sumitomo Rubber Industries, Ltd., Hyogo, and Kao Corporation, Tokyo, all of Japan

PCT No. PCT/JP96/00640, § 371 Date Dec. 19, 1997, § 102(e) Date Dec. 19, 1997, PCT Pub. No. WO96/28500, PCT Pub. Date Sep. 19, 1996

PCT Filed Mar. 14, 1996, Appl. No. 913,863

Claims priority, application Japan, Mar. 14, 1995, 7-80883; Mar. 14, 1995, 7-80884; Apr. 10, 1995, 7-84215; Apr. 10, 1995, 7-84216

Int. Cl.[6] **A61K** *38/46;* **C08J** *3/26;* **C08L** *7/02;* **C08C** *1/04*

U.S. Cl. 528—491 **21 Claims**

1. A method for producing a formed product of deproteinized natural rubber latex comprising:

a protein decomposition step of adding protease and a surfactant to natural rubber latex to decompose protein contained in the natural rubber latex;

a prevulcanization step of subjecting the natural rubber latex to prevulcanization;

a forming step of subjecting the natural rubber latex to forming, said forming step comprising the step of heating the prevulcanized natural rubber to thereby vulcanized the natural rubber latex; and

a cleaning removal step of removing a non-rubber content from the natural rubber latex using cleaning liquid.

5,910,568

MOLECULE INVOLVED IN BINDING OF SPERM TO EGG SURFACES AND PROCEDURES FOR USE OF THIS MOLECULE TO ENHANCE OR DECREASE POTENTIAL FERTILITY

Roy H. Hammerstedt, Boalsburg; Palmer G. Cramer, and Guy F. Barbato, both of State College, all of Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Filed Jan. 11, 1996, Appl. No. 584,671

Int. Cl.[6] **C07K** *14/00;* **A61K** *38/00;38/16*

U.S. Cl. 530—324 **1 Claim**

1. A purified synthetic polypeptide consisting of SEQ ID NO: 12 and SEQ ID NO:13.

5,910,569

IODOTHYRONINE POLYMERS

Keith Roger Latham, Rockville, Md., and Vincent Ernest Latham, Lady Lake, Fla., assignors to Lotus Biochemical Corporation, Radford, Va.

Continuation of application No. 08/347,104, Nov. 22, 1994, Pat. No. 5,767,227. This application Aug. 25, 1997, Appl. No. 917,098.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] **A61K** *38/16*

U.S. Cl. 530—324 **4 Claims**

1. A substantially pure synthetic iodothyronine copolymer of the formula

$$H\text{+}(X)_k\text{—}(Y)_m\text{—}(Z)_n\text{+}_p OH$$

wherein

each X independently represents the residue of a naturally occurring α-amino acid, or a racemate therof;

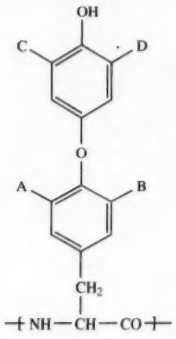
each Z independently represents the residue of a naturally occurring α-amino acid, or a racemate therof;

k and n are each integers ≧0;

m is an integer between 5 and 400;

p is an integer ≧1;

Y represents an amino acid residue having the structure



wherein A is iodo and B, C and D are independently hydrogen or iodo, and wherein X and Z together comprise up to 80% of the units of the copolymer.

5,910,570

CLONED DNA ENCODING A UDP-GALNAC: POLYPEPTIDE N-ACETYLGALACTOSAMINYLTRANSFERASE

Ake P. Elhammer, and Fred L. Homa, both of Kalamazoo, Mich., assignors to Pharmacia & Upjohn Company, Kalamazoo, Mich.

Division of application No. 08/602,830, Nov. 13, 1995, which is a continuation-in-part of application No. 08/063,186, filed as application No. PCT/US94/02552, Mar. 17, 1994, abandoned. This application Nov. 11, 1997, Appl. No. 967,508.

Int. Cl.[6] **C07K** *7/06;* **C12N** *9/10*

U.S. Cl. 530—328 **2 Claims**

1. A polypeptide having the sequence of the acceptor peptide for the enzyme N-acetylgalactosaminyltransferase as follows:

PPASTSAPG

[SEQ ID NO:14] wherein Proline is P, Alanine is A, Serine is S, Threonine is T, and Glycine is G.

5,910,571

DNA ENCODING PHAGE ABORTIVE INFECTION PROTEIN FROM *LACTOCOCCUS LACTIS* AND METHOD OF USE THEREOF

Sylvain Moineau; Barbara J. Holler, both of Rochester, Minn.; Peter A. Vandenbergh, Sarasota, Fla.; Ebenezer R. Vedamuthu, and Jeffrey K. Kondo, both of Rochester, Minn., assignors to Quest International Flavors & Food Ingredients Company, Bridgewater, N.J.

Division of application No. 08/565,907, Dec. 1, 1995. This application Aug. 11, 1997, Appl. No. 910,551.

Int. Cl.[6] **C07K** *1/00*

U.S. Cl. 530—350 **2 Claims**

1. An isolated protein designated as AbiE having an amino acid sequence as encoded by SEQ ID NO:1.

5,910,572

COMPOUNDS

Nicola Gail Wallis, Wayne, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa., and SmithKline Beecham p.l.c., Brentford, United Kingdom

Division of application No. 08/850,118, May 1, 1997, Pat. No. 5,773,250. This application Jan. 16, 1998, Appl. No. 8,253.

Int. Cl.[6] C07K *1/00;* C12N *15/31;15/75*

U.S. Cl. 530—350 18 Claims

1. An isolated response regulator polypeptide having an amino acid sequence that is at least 80% identical over its entire length to the amino acid sequence set forth in SEQ ID NO:2,

whereby said response regulator polypeptide has an amino acid sequence identical to the amino acid sequence of SEQ ID NO:2 except that it may include up to 20 amino acid sequence alterations per each 100 amino acids of SEQ ID NO:2,

wherein said alterations are selected from the group consisting of amino acid deletions, substitutions and insertions, and

wherein said alterations may occur at the amino terminus, or at the carboxyl terminus, or may occur anywhere between said termini, interspersed either individually among the amino acid sequence of SEQ ID NO:2 or in one or more contiguous groups within the amino acid sequence of SEQ ID NO:2.

5,910,573

MONOMERIC AND DIMERIC ANTIBODY-FRAGMENT FUSION PROTEINS

Andreas Plückthun, and Peter Pack, both of München, Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Germany

PCT No. PCT/EP93/00082, § 371 Date Jul. 22, 1994, § 102(e) Date Jul. 22, 1994, PCT Pub. No. WO93/15210, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 15, 1993, Appl. No. 256,790

Claims priority, application European Pat. Off., Jan. 23, 1992, 92101069

Int. Cl.[6] C12P *21/08;* C07K *16/46*

U.S. Cl. 530—387.3 19 Claims

1. A dimeric protein comprising two monomeric fusion proteins in a noncovalent interaction, wherein

the orientation of the monomeric fusion proteins in the dimer is identical with respect to their N- and C-termini,

the noncovalent interaction between monomeric fusion proteins is formed between interactive peptides on each monomeric fusion protein, which peptides are identical with each other or nonidentical, and

each monomeric fusion protein is a monomeric antibody-fragment fusion protein comprising:

(a) a single chain Fv (scFv) fragment of an antibody,

(b) a linker peptide, and

(c) a first interactive peptide comprising a first amphiphilic helical peptide containing up to 50 amino acids, said first amphiphilic helical peptide being capable of forming a dimer with a second amphiphilic helical peptide by noncovalent interaction,

wherein the C-terminus of (a) is fused with the N-terminus of (b), and the C-terminus of (b) is fused with the N-terminus of (c) and,

with the proviso that if either monomeric fusion protein comprises a helical peptide which is a jun-zipper, the other monomeric fusion protein may not comprise a helical peptide which is a jun-zipper.

5,910,574

HUMAN TRK RECEPTORS AND NEUROTROPHIC FACTOR INHIBITORS

Leonard G. Presta, San Francisco; David L. Shelton, and Roman Urfer, both of Pacifica, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of application No. 08/286,846, Aug. 5, 1994, which is a continuation-in-part of application No. 08/215,139, Mar. 18, 1994, abandoned. This application May 31, 1995, Appl. No. 457,880.

Int. Cl.[6] A61K *39/395*

U.S. Cl. 530—388.22 15 Claims

1. A monoclonal antibody or antigen-binding fragment thereof, that specifically binds a polypeptide comprising an amino acid sequence selected from the group consisting of:

(a) mature human trkB in SEQ ID NO: 2;

(b) mature human trkC in SEQ ID NO: 6;

(c) trk B or trk C polyphide encode by a naturally-occurring allelic variant or splice variant of (a) or (b); and,

(d) a neurotrophin-binding, second immunoglobulin-like C2-type domain of (a), (b), or (c).

5,910,575

IMMUNOASSAY AND MONOCLONAL ANTIBODIES FOR URINARY CORTISOL

Nina Lupi-Chen, Marseilles; Elisabeth Mappus, Ste Foy les Lyon; Catherine Fournier, Villeurbanne; Christophe Barrande; Sandrine Portuesi, both of Marseilles, and Yves-Claude Cuilleron, Ste Foy les Lyon, all of France, assignors to Immunotech, Marseille, France, and Inserm, Paris, France

Filed Mar. 22, 1996, Appl. No. 620,337

Claims priority, application France, Mar. 24, 1995, 95.03749

Int. Cl.[6] C07K *16/00*

U.S. Cl. 530—388.24 8 Claims

1. A monoclonal antibody which specifically binds cortisol in urine without interference by urine constituents, wherein:

said monoclonal antibody binds ^{125}I-labeled derivatives of cortisol-3-carboxymethyloxime(anti)-histamine and ^{125}I-labeled derivatives of cortisol-3-carboxymethyloxime(syn)-histamine with the same affinity; and

said monoclonal antibody binds unlabeled derivatives of cortisol-3-carboxymethyloxime (anti)-histamine isomer and cortisol-3-carboxymethyloxime(syn)-histamine isomers with a ratio of affinities (IC_{50}) greater than 1 in favor of the syn isomer.

5,910,576

METHOD FOR SCREENING FOR THE PRESENCE OF A GENETIC DEFECT ASSOCIATED WITH THROMBOSIS AND/OR POOR ANTICOAGULANT RESPONSE TO ACTIVATED PROTEIN

Rogier Maria Bertina, and Pieter Hendrik Reitsma, both of Leiden, Netherlands, assignors to Rijks Universiteit Leiden, Re Leiden, Netherlands

Division of application No. 08/454,353, Jun. 6, 1995. This application Jun. 5, 1996, Appl. No. 658,340.

Claims priority, application European Pat. Off., Feb. 14, 1994, 94200377

Int. Cl.[6] C07K *16/00;* A61K *35/14*

U.S. Cl. 530—388.25 8 Claims

1. An antibody that binds to human Factor V, human Factor Va, or fragments thereof, said factors having a mutation at amino acid position 506 where glutamine is substituted for arginine, wherein said antibody will bind to an epitope comprising the mutation at position 506 and has a lower binding affinity for the corresponding non-mutated factor or fragment therefore.

5,910,577

QUINOXALINE-MONOAZO-ACETARYLIDE PIGMENT

Hans Joachim Metz, Darmstadt, and Joachim Weber, Frankfurt, both of Germany, assignors to Clariant GmbH, Frankfurt, Germany

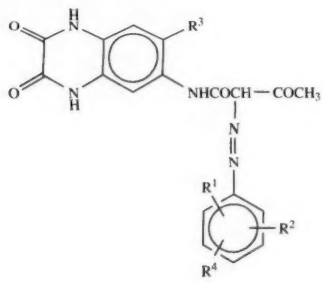
Filed Jul. 31, 1998, Appl. No. 127,136

Claims priority, application Germany, Aug. 1, 1997, 197 33 307

Int. Cl.[6] **C09B** *29/33;67/20;* **C09D** *11/00;* **C08K** *5/3465*

U.S. Cl. 534—742 **10 Claims**

1. A compound of the formula (I)



(I)

in which

R^1 and R^2 are identical or different and are Cl, $COO(C_1–C_4)$-alkyl, $CONH_2$, $CONCH_3$, $CON(CH_3)_2$ or SO_2NRR', where R and R' are identical or different and are hydrogen, $C_1–C_4$-alkyl or phenyl, it being possible for phenyl to be substituted by methyl, ethyl, methoxy, ethoxy or halogen,

R^3 is hydrogen, methyl, methoxy, ethoxy, chloro or bromo, and

R^4 is hydrogen, $C_1–C_3$-alkyl, chloro or bromo.

5,910,578

PHENYLAZOANILINES

Peter Saling, Neustadt; Erhard Klahr, Ludwigshafen; Helmut Reichelt, Neustadt, and Sabine Gruettner-Merten, Bensheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

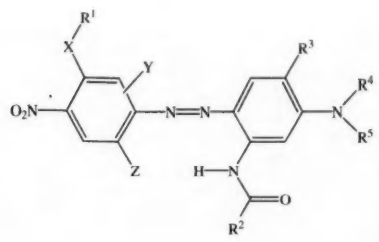
Filed Jul. 15, 1998, Appl. No. 115,699

Claims priority, application Germany, Jul. 15, 1997, 197 30 168

Int. Cl.[6] **C09B** *29/01;29/085;* **D06P** *1/18*

U.S. Cl. 534—850 **10 Claims**

1. An azo dye of the formula I



(I)

where

X is oxygen or a radical of the formula NR^6, where R^6 is hydrogen or $C_1–C_{13}$-alkyl with or without interruption by from 1 to 4 oxygen atoms in ether function and with or without hydroxyl or $C_1–C_4$-alkanoyloxy substitution,

R^1 is $C_1–C_{13}$-alkyl with or without interruption by from 1 to 4 oxygen atoms in ether function and with or without hydroxyl, $C_1–C_4$-alkanoyloxy or halogen-substituted $C_1–C_4$-alkanoyloxy substitution, or is substituted or unsubstituted phenyl,

Y is hydrogen, halogen or cyano,

Z is nitro or additionally cyano when Y is halogen or cyano,

R^2 is $C_1–C_4$-alkyl, methoxymethyl or substituted or unsubstituted phenyl,

R^3 is hydrogen, $C_1–C_4$-alkoxy or $C_1–C_4$-alkyl, and

R^4 and R^5 are identical or different and are each independently of the other $C_2–C_{13}$-alkyl with or without interruption by from 1 to 4 oxygen atoms in ether function and with or without hydroxyl, $C_1–C_4$-alkanoyloxy or cyano substitution or $C_2–C_6$-alkenyl.

5,910,579

PROCESSES FOR THE PREPARATION OF αGAL(1->4)βGAL (1->4) GLC-OR

Robert E. Yeske, St. Albert; Robert A. Verhagen, Calgary, and Joaquin Roberto Mendez, Edmonton, all of Canada, assignors to Synsorb Biotech Inc., Alberta, Canada

Continuation-in-part of application No. 08/781,327, Jan. 10, 1997, abandoned. This application Sep. 30, 1997, Appl. No. 941,030.

Int. Cl.[6] **C07H** *3/06;1/00;* **A61K** *31/715*

U.S. Cl. 536—18.5 **10 Claims**

1. A process for the synthesis of αGal(1→4)βGal(1→4)Glc-OR^1 compounds which process comprises:

(a) contacting β-thio-R lactoside with at least a stoichiometric amount of an α,α-dialkoxytoluene wherein the toluene group is optionally substituted on the phenyl ring with 1 to 3 substituents independently selected from alkyl, alkoxy, cyano, halo, nitro, and trihalomethyl under conditions to provide for β-thio-R 4'-6'-di-O-benzylidine lactoside

wherein R is selected from the group consisting of alkaryl, alkyl and aryl optionally substituted with 1 to 2 substituents selected from halo, alkyl, and alkoxy and farther wherein the benzylidene group of the resulting β-thio-R 4'-6'-di-O-benzylidene lactoside is optionally substituted on the phenyl ring with 1 to 3 substituents selected from alkyl, alkoxy, cyano, halo, nitro, and trihalomethyl;

(b) benzoylating the compound produced in (a) above with at least 5 equivalents of benzoyl halide under conditions to provide for β-thio-R 4',6'-di-O-benzylidene-2,2',3,3',6-penta-O-benzoyl-lactoside;

(c) contacting the compound produced in (b) above with a reactive halide compound under conditions to provide for either the α-chloro 4',6'-di-O-benzylidene-2,2',3,3',6-penta-O-benzoyl-lactoside or the α-bromo 4',6'-di-O-benzylidene-2,2',3,3',6-penta-O-benzoyl-lactoside;;

(d) contacting the compound produced in (c) above with a compound of the formula HOR^1 where R^1 is an aglycon of at least one carbon atom under conditions to provide for β-aglycon 4',6'-di-O-benzylidine-2,2',3,3',6-penta-O-benzoyl-lactoside;

(e) contacting the compound produced in (d) above with a reducing agent under conditions which provide for β-aglycon 2,2',3,3',6-penta-O-benzoyl-6'-O-benzyl-lactoside wherein the benzyl group is optionally substituted on the phenyl ring with 1 to 3 substituents selected from alkyl, alkoxy, cyano, halo, nitro, and trihalomethyl;

(f) contacting the compound produced in (e) above with β-thiobenzyl 2,3,4,6-tetra-O-benzyl-D-galactose under conditions to provide for aglycon (2",3",4",6"-tetra-O-benzyl-α-D-galactopyranosyl)-(1→4)-O-(2',3'-di-O-benzoyl-6'-O-benzyl-β-D-galactopyranosyl)-(1→4)-O-(2,3,6-tri-O-benzoyl-β-D-glucopyranoside); and

(g) removing the benzyl and benzoyl protecting groups in the compound produced in (f) above under conditions to provide for α-D-galactopyranosyl-(1→4)-O-β-D-galactopyranosyl-(1→4)-O-β-D-glucopyranoside which can also be referred to as αGal(1→4)βGal(1→4)Glc-OR^1 where R^1 is an aglycon of at least 1 carbon atom.

5,910,580

STREPTOCOCCUS PNEUMONIAE GENE SEQUENCE HI1648

Paul Luther Skatrud, Greenwood; Robert Brown Peery, Brownsburg, and Patti Jean Treadway, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Provisional application No. 60/036,281, Dec. 13, 1996. This application Dec. 8, 1997, Appl. No. 987,122.

Int. Cl.^{6} C07H *21/02;* **Z07H** *21/04*

U.S. Cl. 536—22.1 **13 Claims**

1. An isolated nucleic acid compound encoding the protein having the amino acid sequence that is SEQ ID NO:2.

5,910,581

POLYPEPTIDES OF GLYCOSAMINOGLYCAN SULFOTRANSFERASE ORIGINATING FROM HUMAN AND DNA CODING FOR THE POLYPEPTIDES

Osami Habuchi, Nagoya, and Masakazu Fukuta, Mie-ken, both of Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1997, Appl. No. 899,514

Claims priority, application Japan, Jul. 24, 1996, 8-195063

Int. Cl.^{6} C12N *15/54;9/10*

U.S. Cl. 536—23.2 **7 Claims**

1. An isolated DNA coding for a polypeptide having a glycosaminoglycan sulfotransferase activity, said polypeptide originating from humans and having the following properties:

(i) action: sulfate group is transferred from a sulfate group donor to N-acetylgalactosamine residue or galactose residue of glycosaminoglycan; and

(ii) substrate specificity: sulfate group is transferred to the hydroxyl group position at C-6 of N-acetylgalactosamine residue of chondroitin; and sulfate group is transferred to the hydroxyl group position at C-6 of galactose residue of keratan sulfate.

5,910,582

HUMAN NEURONAL NICOTINIC ACETYLCHOLINE RECEPTOR COMPOSITIONS AND METHODS EMPLOYING SAME

Kathryn J. Elliott; Steven B. Ellis, both of San Diego, and Michael M. Harpold, El Cajon, all of Calif., assignors to SIBIA Neurosciences, Inc., La Jolla, Calif.

Continuation of application No. 08/028,031, Mar. 8, 1993, abandoned. This application Jul. 16, 1996, Appl. No. 700,636.

Int. Cl.^{6} C07H *21/02;21/04;* **C12P** *21/00*

U.S. Cl. 536—23.5 **10 Claims**

1. Isolated nucleic acid encoding the β_4 subunit of a human neuronal nicotinic acetylcholine receptor, or the full complement of said nucleic acid.

5,910,583

ANTISENSE OLIGONUCLEOTIDES AGAINST ERBB-2

Jeffrey R. Marks, Hillsborough; James P. Vaughn, and James D. Inglehart, both of Durham, all of N.C., assignors to Duke University, Durham, N.C.

Filed Nov. 4, 1996, Appl. No. 740,821

Int. Cl.^{6} C07H *21/04;* **C12Q** *1/68*

U.S. Cl. 536—24.5 **3 Claims**

1. An oligonucleotide consisting of the nucleotide sequence:
GGT GCT CAC TGC GGC (SEQ ID NO:2); or
TGC GGC TCC GGC CCC (SEQ ID NO:5).

5,910,584

METHOD FOR ISOLATING PLASMID DNA

Akira Yamamoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1997, Appl. No. 922,356

Claims priority, application Japan, Sep. 5, 1996, 8-235399

Int. Cl.^{6} C07H *1/06*

U.S. Cl. 536—25.4 **7 Claims**

1. A method for isolating a plasmid deoxyribonucleic acid, comprising:

suspending particles of a calcium phosphate compound having a Ca/P ratio of about 1.0 to about 2.0 in a buffer solution having a pH of about 7 to about 10, about 10 to about 50 mM of an alkali metal salt of ethylenediaminetetraacetic acid, and about 1 to about 100 mM of tris(hydroxymethyl)aminomethane, to obtain a calcium phosphate particles-containing suspension;

adding a solution containing ribonucleic acid and plasmid deoxyribonucleic acid, obtained upon bacteriolysis, to said calcium phosphate particles-containing suspension, thereby adsorbing said ribonucleic acid onto the calcium phosphate particles in said calcium phosphate particles-containing suspension; and

recovering said plasmid deoxyribonucleic acid from a supernatant of said calcium phosphate particles-containing suspension.

5,910,585

PROCESS FOR THE PRODUCTION OF COPPER PHTHALOCYANINE

Atsushi Endo, and Yasumasa Suda, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Japan

Filed Apr. 21, 1998, Appl. No. 63,271

Claims priority, application Japan, May 12, 1997, 9-120386

Int. Cl.^{6} C09B *67/50;47/04*

U.S. Cl. 540—144 **6 Claims**

1. A process for the production of copper phthalocyanine or its derivative from phthalic anhydride or a phthalic anhydride derivative, ammonia, copper or a copper compound, and urea,

the process comprising the steps of

(A) reacting the phthalic anhydride or the phthalic anhydride derivative with ammonia to form phthalimide,

(B) adding part or all of the urea to the phthalimide obtained in step (A) and melting the mixture under heat to form a homogeneous slurry, and

(C) adding the copper or the copper compound and remaining urea if any to the slurry obtained in step (B) and forming a copper phthalocyanine or a copper pthalocyanine derivative in the presence of a molylodenum compound as a catalyst.

5,910,586

TRICYCLIC AMINOALKYLCARBOXAMIDES; DOPAMINE D_3 RECEPTOR SUBTYPE SPECIFIC LIGANDS

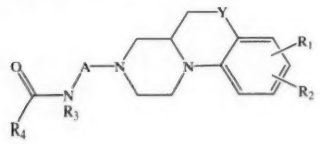
Xi Chen, New Haven; Jun Yuan, Clinton, and Andrew Thurkauf, Danbury, all of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation of application No. 08/636,662, Apr. 23, 1996, Pat. No. 5,688,950. This application Nov. 6, 1997, Appl. No. 965,275.

Int. Cl.[6] **C07D** *241/38;273/04;285/15*

U.S. Cl. 544—34 **3 Claims**

1. A compound of the formula:



R_1, and R_2 are the same or different and represent hydrogen, C_1–C_6 alkyl, halogen, hydroxy, amino, cyano, nitro, trifluoromethyl, trifluoromethoxy, C_1–C_6 alkoxy, —O_2CR', —NHCOR', —COR', —SO_mR', where R' is C_1–C_6 alkyl and wherein m is 0, 1 or 2; or

R_1 and R_2 independently represent —CONR'R", or —NR'R" where R' and R" independently represent hydrogen or C_1–C_6 alkyl;

R_3 is hydrogen or lower alkyl;

A represents an alkylene group of 2 to 6 carbon atoms optionally substituted with one or more alkyl groups having from 1 to 4 carbon atoms;

Y represents methylene, oxygen, sulfur, or NH;

R_4 is biphenyl, naphthyl, 1 or 2 anthracenyl, 1 or 2 biphenylenyl, dibenzofuranyl, dibenzothiophenenyl, fluorenyl, fluorenonyl, anthroquinonyl, 2-quinoxalinyl or azabiphenyl, each of which is optionally substituted independently by up to three groups selected from halogen, C_1–C_6 alkyl, C_1–C_4 alkoxy, alkylthio, hydroxy, amino, monoalkylamino, dialkylamino, cyano, nitro, trifluoromethyl or trifluoromethoxy.

5,910,587

COMPOUNDS CONTAINING TRIAZINE RING

Ivan Wlassics, Genoa, and Walter Navarrini, Milan, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Feb. 24, 1998, Appl. No. 28,771

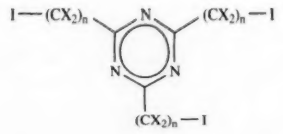
Claims priority, application Italy, Feb. 25, 1997, MI97A0400

Int. Cl.[6] **C07D** *251/24*

U.S. Cl. 544—216 **2 Claims**

1. Triazines of formula

II



wherein:

X can independently be hydrogen, chlorine, fluorine, C_1–C_3 alkyl or perfluoro alkyl,

n is an integer ranging 2 and 20.

5,910,588

CRYSTAL MODIFICATION OF 2,4-DIAMINO-6-HYDROXYMETHYLPTERIDINE HYDROBROMIDE

Carsten Wangnick, Waldkirch, and Peter Merrath, Memmingen, both of Germany, assignors to Heinrich Mack Nachf, Germany

Continuation of application No. 08/597,906, Feb. 7, 1996, Pat. No. 5,760,229. This application Nov. 19, 1997, Appl. No. 974,369.

Claims priority, application Germany, Feb. 7, 1995, 195 03 966

Int. Cl.[6] **C02D** *428/08*

U.S. Cl. 544—260 **5 Claims**

1. A process for preparing methotrexate, consisting essentially of reacting a crystal modification of the compound 2,4-diamino-6-hydroxymethylpteridine hydrobromide (DHP-HBr) having an x-ray powder diffraction spectrum obtained with Cu K_α radiation containing the following high-intensity peaks:

Angle (°)	I/I_{max} (%)
12.4	100
18.8	13
23.8	6
24.4	21
25.7	8
26.1	60
26.9	*6*
29.5	6
32.2	26
32.4	14
34.6	10
44.9	7

with triphenylphosphine dibromide to form 6-bromomethyl-2,4 diaminopteridine hydrobromide, reacting the 6-bromomethyl-2,4 diaminopteridine hydrobromide with diethyl-(4-(N-methyl amino) benzoyl) glutamate to form diethyl methotrexate, and hydrolyzing the diethyl methotrexate formed to yield methotrexate or a salt thereof, wherein said crystal modification of DHP-HBr and triphenyl phosphine dibromide are reacted at a molar ratio of from about 1:1 to about 1:1.3.

5,910,589

PHARMACEUTICALS PREPARATION OF 2-AMINO-6-CHLOROPURINE WITH TEMAC

John Christopher Hanson, Epsom, United Kingdom, assignor to SmithKline Beecham p.l.c., Brentford, United Kingdom

PCT No. PCT/GB02/00177, § 371 Date Jul. 30, 1993, § 102(e) Date Jul. 30, 1993, PCT Pub. No. WO92/13859, PCT Pub. Date Aug. 20, 1992

Continuation of application No. 08/094,132, filed as application No. PCT/GB92/00179, Jan. 30, 1992, abandoned. This PCT application Jan. 30, 1992, Appl. No. 409,490.

Claims priority, application United Kingdom, Jan. 31, 1991, 9102127

Int. Cl.[6] **C07D** *473/40*

U.S. Cl. 544—277 **5 Claims**

1. A process for preparing 2-amino-6-chloropurine which process comprises reacting guanine with a chlorinating agent in the presence of TEMAC, in a solvent.

5,910,590

CERTAIN ARYL SUBSTITUTED PYRROLOPYRAZINES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

Charles Blum, Guilford, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

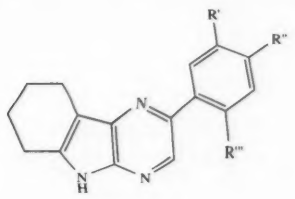
Continuation of application No. 08/486,595, Jun. 7, 1995, Pat. No. 5,668,283. This application Sep. 16, 1997, Appl. No. 931,648.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] C07D *471/00;487/00;491/00;495/00*

U.S. Cl. 544—345 **1 Claim**

1. A compound of the formula:



where R' and R" are independently hydrogen or lower alkoxy *having 1–6 carbon atoms; and R'" is halogen.*

5,910,591

METHOD OF PREPARATION OF 4-HYDROXY-1,2,2,6,6-PENTAMETHYLPIPERIDINE

Masaaki Yasuda, Kuga-gun, Japan, assignor to Mitsui Chemicals, Inc., Tokyo, Japan

Filed Oct. 17, 1997, Appl. No. **953,517**

Claims priority, application Japan, Oct. 17, 1996, 8-274753; Nov. **21, 1996, 8-310386**

Int. Cl.[6] C07D 211/44

U.S. Cl. 546—242 **9** Claims

1. A method for preparing 4-hydroxy-1,2,2,6,6-pentamethylpiperidine comprising the following steps:

(i) reacting 4-hydroxy-2,2,6,6-tetramethylpiperidine with at least one compound selected from the group consisting of formaldehyde, paraformaldehyde and trioxane, optionally in the presence of formic acid;

(ii) neutralizing the reaction product of step (i) by adding a base thereto; and

(iii) after the neutralization, separating the crude product from the aqueous layer and crystallizing and filtering the crude product;

wherein a water content of the crystals of 4-hydroxy-1,2,2,6,6-pentamethylpiperidine obtained in step (iii) is controlled to be 3% by weight or less by regulating a base concentration of the aqueous layer obtained after the neutralization to be 25% by weight or more.

5,910,592

SUBSTITUTED THIAZOLIDINEDIONE DERIVATIVES

Colin Ripley Pool, Cranleigh; Robin Sherwood Roman, Fetcham; Malcolm David Brightwell, Redhill, and Alan William Tremper, Edenbridge, all of United Kingdom, assignors to SmithKline Beecham plc, Brentford, United Kingdom

Continuation of application No. 08/464,990, Jun. 5, 1995, abandoned, which is a continuation of application No. 08/392,878, Mar. 3, 1995, which is a continuation of application No. PCT/GB93/01853, Sep. 1, 1993. This application Jul. 14, 1997, Appl. No. 892,045.

Claims priority, application United Kingdom, Sep. 5, 1992, 9218830

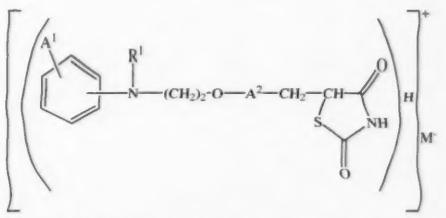
This patent is subject to a terminal disclaimer.

Int. Cl.[6] C07D *417/10*

U.S. Cl. 546—269.7 **2 Claims**

1. A compound of formula (I):

(I)



or a tautomeric form thereof,wherein:

R^1 represents a hydrogen atom, C_{1-12} alkyl, C_{1-12} alkoxy, C_{1-12} alkylcarbonyl or arylC_{1-12}alkyl;

A^1 represents hydrogen or 1 to 4 optional substituents selected from the group consisting of: C_{1-12} alkyl, C_{1-12} alkoxy, aryl and halogen;

aryl represents phenyl or naphthyl optionally substituted with up to five groups selected from halogen, C_{1-12} alkyl, phenyl, C_{1-12} alkoxy, haloC_{1-12} alkyl, hydroxy, nitro, C_{1-12} alkoxycarbonyl, C_{1-12} alkoxycarbonyl C_{1-12} alkoxycarbonyloxy, or C_{1-12} alkylcarbonyl;

A^2 represents a benzene ring having 1 to 3 optional substituents selected from hydrogen, halogen, C_{1-12} alkyl, C_{1-12} alkoxy; and

M^- represents a counter-ion other than the maleate ion.

5,910,593

HIGHLY SELECTIVE PROCESS FOR THE PREPARATION OF ENANTIOMERICALLY PURE PHENYLSUBSTITUTED 1,4-DIHYDROPYRIDINE-3,5-DICARBOXYLIC ACID DERIVATIVES

Joachim Mittendorf; Peter Fey; Bodo Junge, all of Wuppertal; Johannes Kaulen, Boffzen; Kai van Laak, Köln, all of Germany; Heinrich Meier, Kobe, Japan, and Rudolf Schohe-Loop, Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of application No. 08/896,275, Jul. 16, 1997, Pat. No. 5,849,924, which is a division of application No. 08/563,725, Nov. 28, 1995, Pat. No. 5,700,948. This application Sep. 21, 1998, Appl. No. 158,428.

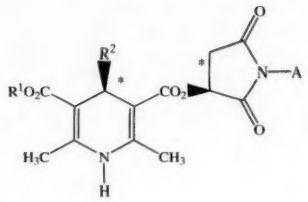
Claims priority, application Germany, Dec. 5, 1994, 4443168

Int. Cl.[6] C07D *401/02*

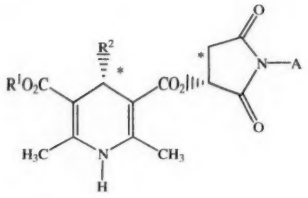
U.S. Cl. 546—278.4 **3 Claims**

1. 1,4-dihydropyridines of the formula (IVa) and (IVb)

(IVa)



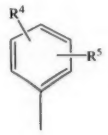
(IVb)



in which

R^1 represents straight-chain or branched alkyl having up to 8 carbon atoms which is optionally substituted by straight-chain or branched alkoxy having up to 6 carbon atoms or hydroxyl, or represents cycloalkyl having 3 to 7 carbon atoms, and

R^2 represents the radical



in which

R^4 and R^5 are identical or different and denote halogen, cyano, ethinyl, trifluoromethoxy, methylthio, nitro, trifluoromethyl or straight-chain or branched alkyl, alkenyl, alkinyl or alkoxy having up to 4 carbon atoms, and one of the substituents optionally represents halogen, and

A represents hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms, or represents phenyl or benzyl which are optionally substituted one to three times by identical or different substituents selected from the group consisting of hydroxyl, nitro, halogen, cyano, carboxyl, trifluoromethyl, trifluoromethoxy, straight chain or branched alkoxy having up to 6 carbon atoms and a group of the formula $—NR^6R^7$ or SO_2R^8,

in which

R^6 and R^7 are identical or different, and denote hydrogen, phenyl or straight-chain or branched alkyl having up to 5 carbon atoms, and

R^8 denotes straight-chain or branched alkyl having up to 4 carbon atoms or phenyl, or a salt thereof.

5,910,594

PROCESS FOR THE MANUFACTURE OF 5-CYANO-4-LOWER ALKYL-OXAZOLES

Klaus Behringer, Basle, Switzerland; Werner Bonrath, Freiburg, Germany, and Horst Pauling, Bottmingen, Switzerland, assignors to Roche Vitamins Inc., Parsippany, N.J.

Filed Jan. 20, 1998, Appl. No. 8,793

Claims priority, application European Pat. Off., Feb. 13, 1997, 97102339

Int. Cl.[6] **C07D** *263/34;263/30;263/44;263/36*

U.S. Cl. 548—236 **21 Claims**

1. A process for the manufacture of a 5-cyano-4-lower alkyl-oxazole which comprises reacting, in an aprotic organic solvent, a 5-carbamoyl-4-lower alkyl-oxazole with silicon tetrachloride in the presence of an amine, to dehydrate said 5-carbamoyl-4-lower alkyl-oxazole and thereby produce said 5-cyano-4-lower alkyl-oxazole.

5,910,595

PROCESS FOR PREPARING OXIMIDAZOLES

J. Robert Durrwachter, Charles City, Iowa, assignor to Salsbury Chemicals, Inc., Charles City, Iowa

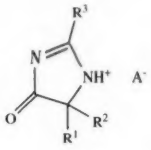
Filed Jun. 26, 1998, Appl. No. 105,597

Int. Cl.[6] **C07D** *233/32;235/02*

U.S. Cl. 548—300.7 **15 Claims**

1. A process for the preparation of an imidazolone or the pharmaceutically acceptable salts thereof having the formula

1

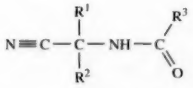


wherein R, and R2 are the same or different and are C1 to C6 alkyl, C2 to C6 alkenyl, C1 to C6 cycloalkyl, aryl either unsubstituted or substituted with at least one substituent selected from the group consisting of C1 to C6 alkyl, C1 to C6 alkoxy and halo or heteroaryl either unsubstituted or substituted with C1 to C6 alkyl or halo;

or R1 and R2 taken together with the carbon atom in the imidazolone ring form a carbocyclic or heterocyclic ring having from three to seven members and is saturated or is at least mono unsaturated;

R3 is C1 to C6 alkyl, C2 to C6 alkenyl, C3 to C6 cycloalkyl, aryl either unsubstituted or substituted with at least one substituent selected from the group consisting of C1 to C6 alkyl, C1 to C6 alkoxy and halo or heteroaryl either unsubstituted or substituted with C1 to C6 alkyl or halo; and A is an anion of an organic or inorganic acid, said process comprising reacting an acylaminonitrile of the formula

2



wherein R1, R2 and R3 are as defined above with an organic or inorganic acid having the formula HA where A is as defined above in a nonaqueous solvent and in the presence of an alcohol of the formula R—OH where R is C5 to C12 alkyl, C5 to C12 alkenyl, C5 to C12 cycloalkyl, poly alkylene ether, polyalkylene thioether or aryl either unsubstituted or substituted with at least one C1 to C6 alkyl, C1 to C6 alkoxy or halo.

5,910,596

ESTERIFICATION OF BENZOIC ACID SUBSTITUENTS OF 3-ARYL-5-HALOALKYL-PYRAZOLES HAVING HERBICIDAL ACTIVITY

Michael K. Mao, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of application No. 08/667,103, Jun. 20, 1996, Pat. No. 5,698,708. This application Oct. 3, 1997, Appl. No. 943,848.

Int. Cl.[6] **C07D** *231/10;231/12;* **C07C** *49/78;65/32*

U.S. Cl. 548—377.1 **31 Claims**

1. A process for esterifying a carboxylic acid substrate, the process comprising

reacting the carboxylic acid with a halogenating agent to form an acid halide, and

reacting the acid halide with an esterification reagent to form a carboxylic acid ester, the esterification reagent being formed by mixing an alcohol and an acylhalide.

5,910,597

PROCESS FOR PREPARING 3-HALOALKYL-1H-PYRAZOLES

Benxin Zhi, Hoffman Estates, and Murad Newaz, Palatine, both of Ill., assignors to G.D. Searle & Co., Chicago, Ill.

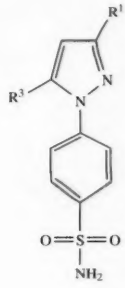
Continuation of application No. 08/867,754, Jun. 3, 1997, which is a continuation of application No. 08/449,975, May 25, 1995, abandoned. This application Oct. 14, 1998, Appl. No. 172,540.

Int. Cl.[6] **G07D** *231/12*

U.S. Cl. 548—377.1 **14 Claims**

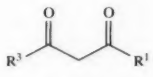
1. A process for preparing compounds of Formula II

II



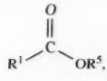
the process comprising forming a diketone of Formula III

III



by treating a compound of the formula

with a base and a haloalkylester of the formula



adjusting the pH of a solution of the diketone and a solvent comprising an aqueous alcohol, to a pH below 7, and

treating said solution with 4-(aminosulfonyl)phenylhydrazine or a salt thereof;

wherein R^1 is haloalkyl; wherein R^3 is selected from cycloalkyl, cycloalkenyl, aryl and heteroaryl; wherein R^3 is optionally substituted at a substitutable position with one or more radicals selected from halo, alkylthio, alkylsulfonyl, cyano, nitro, haloalkyl, alkyl, hydroxyl, alkenyl, hydroxyalkyl, carboxyl, cycloalkyl, alkylamino, dialkylamino, alkoxycarbonyl, aminocarbonyl, alkoxy, haloalkoxy, aminosulfonyl, heterocyclo and amino; and wherein R^5 is lower alkyl.

5,910,598

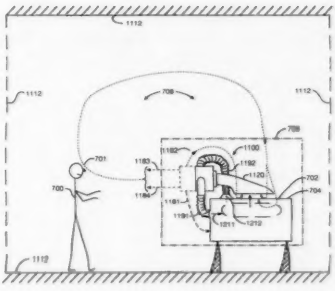
MODULAR PROCESS ZONE AND PERSONNEL ZONE ENVIRONMENTAL CONTROL WITH DEDICATED AIR JET CLEANING

Frederick M. Shofner, Knoxville, and Dennis J. Roeder, Powell, both of Tenn., assignors to Shofner Engineering Associates, Inc., Knoxville, Tenn.

Continuation-in-part of application No. 08/333,364, Nov. 2, 1994, abandoned. This application Oct. 31, 1995, Appl. No. 550,710.

Int. Cl.[6] **B65H** *54/70;* **D03J** *1/00*

U.S. Cl. 55—385.2 **6 Claims**



1. An environmental control apparatus unit comprising:

at least one of a gas flow capture element and a gas flow source element positionable in close proximity to a process zone of a materials processing machine;

an element for directing a conditioned gas flow to a personnel zone; and

an element for conditioning a gas flow directed to a machine process zone differently from a gas flow directed to the personnel zone.

5,910,599

PREPARATION OF ANTIMONY ETHYLENEGLYOXIDE

Yoshio Tanaka, 19-17, Sujikai-Cho, Kishiwada-Shi, Osaka; Kazuyuki Koide, and Hiroyuki Kawabata, both of 13-50, Juhachijo 1-Chome, Yodogawa-Ku, Osaka, all of Japan

Filed Sep. 11, 1997, Appl. No. 927,651

Claims priority, application Japan, Apr. 11, 1997, 110312

Int. Cl.[6] **C07F** *9/90*

U.S. Cl. 556—76 **3 Claims**

1. A process for the preparation of antimony glycoloxide which comprises forming a mixture by reacting either an antimony trihalide or an antimony pentahalide with ethylene glycol.

5,910,600

BISPHOSPHITE COMPOUND, PROCESS FOR ITS PRODUCTION AND HYDROFORMYLATION PROCESS EMPLOYING THE BISPHOSPHITE COMPOUND

Hisao Urata; Hiroaki Itagaki; Eitaro Takahashi; Yasuhiro Wada; Yoshiyuki Tanaka, all of Yokohama, and Yasukazu Ogino, Kurashiki, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Apr. 28, 1997, Appl. No. 845,835

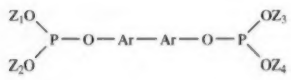
Claims priority, application Japan, Apr. 30, 1996, 8-109185; Apr. 30, 1996, 8-109186

Int. Cl.[6] C07F *9/12;* C07C *45/50*

U.S. Cl. 558—162 15 Claims

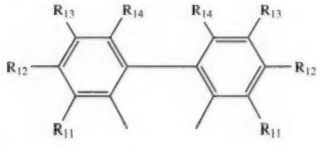
1. A bisphosphite compound of the following formula (A):

(A)



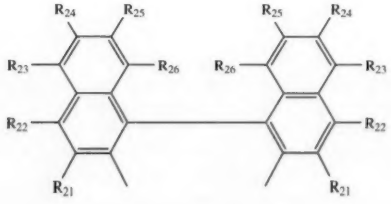
wherein —Ar—Ar— is a bisarylene group represented by any of the following formulae (A-I) to (A-III), and each of Z_1 to Z_4 is a C_{4-20} aromatic or heteroaromatic group which may have a substituent, wherein each of substituents on carbon atoms of an aromatic ring adjacent to the carbon atom bonded to the oxygen atom in each of Z_1 to Z_4, is a group selected from the group consisting of hydrogen, methoxy, methyl, ethyl, trifluoromethyl, cyano, nitro and halogen, and each pair of Z_1 and Z_2, and Z_3 and Z_4, are not bonded to each other,

(A-I)



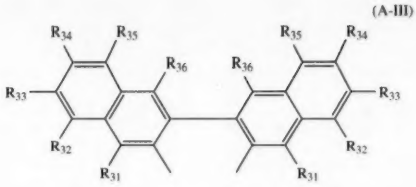
wherein each R_{11} which is independent of the other R_{11}, is a C_{4-20} alkyl or cycloalkyl group, and each of R_{12} to R_{14} which are independent of one another, is a hydrogen atom, a C_{1-20} alkyl, alkoxy, cycloalkyl, cycloalkoxy, dialkylamino, aryl, aryloxy, alkylaryl, alkylaryloxy, arylalkyl or arylalkoxy group, a cyano group, a hydroxyl group or a halogen atom,

(A-II)



wherein each R_{21} which is independent of the other R_{21}, is the same as R_{11} in the formula (A-I), and each of R_{22} to R_{26} which are independent of one another, is the same as R_{12} to R_{14} in the formula (A-I),

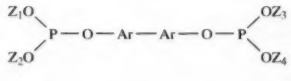
(A-III)



wherein each R_{31} which is independent of the other R_{31}, is the same as R_{11} in the formula (A-I), and each of R_{32} to R_{36} which are independent of one another, is the same as R_{12} to R_{14} in the formula (A-I).

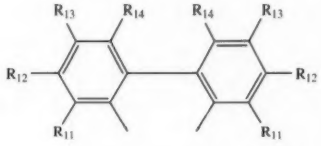
9. A hydroformylation process for producing aldehydes, which comprises reacting an olefinic compound with carbon monoxide and hydrogen in the presence of a compound of an element selected from Groups 8 to 10 of the Periodic Table (hereinafter referred to as a "Group VIII metal"), wherein the reaction is carried out in the presence of a bisphosphite compound of the following formula (A):

(A)



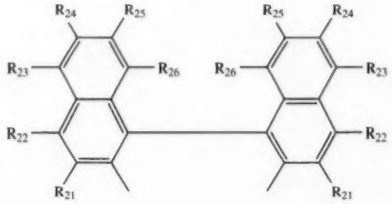
wherein —Ar—Ar— is a bisarylene group represented by any one of the following formulae (A-I) to (A-III), and each of Z_1 to Z_4 is a C_{4-20} aromatic or heteroaromatic group which may have a substituent, wherein each of substituents on carbon atoms of an aromatic ring adjacent to the carbon atom bonded to the oxygen atom in each of Z_1 to Z_4, is a group selected from the group consisting of hydrogen, methoxy methyl, ethyl, trifluoromethyl, cyano, nitro and halogen, and each pair of Z_1 and Z_2, and Z_3 and Z_4, are not bonded to each other,

(A-I)



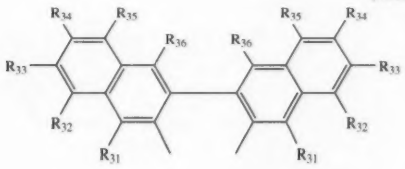
wherein R_{11} which is independent of the other R_{11}, is a C_{3-20} alkyl or cycloalkyl group, and each of R_{12} to R_{14} which are independent of one another, is a hydrogen atom, a C_{1-20} alkyl, alkoxy, cycloalkyl, cycloalkoxy, dialkylamino, aryl, aryloxy, alkylaryl, alkylaryloxy, arylalkyl or arylalkoxy group, a cyano group, a hydroxyl group or a halogen atom,

(A-II)



wherein each R_{21} which is independent of the other R_{21}, is the same as R_{11} in the formula (A-I), and each of R_{22} to R_{26} which are independent of one another, is the same as R_{12} to R_{14} in the formula (A-I),

(A-III)



wherein each R_{31} which is independent of the other R_{31}, is the same as R_{11} in the formula (A-I), and each of R_{32} to R_{36} which are independent of one another, is the same as R_{12} to R_{14} in the formula (A-I).

5,910,601

CHIRAL NITRILES, THEIR PREPARATION AND THEIR USE FOR THE MANUFACTURE OF VERAPAMIL AND ANALOGUES

Raymond McCague, Cambridgeshire, and Shouming Wang, Cambridge, both of United Kingdom, assignors to Darwin Discovery Limited, United Kingdom

PCT No. PCT/GB94/02091, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO95/09150, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 26, 1994, Appl. No. 624,431

Int. Cl.[6] C07C *255/07;255/33;255/42*

U.S. Cl. 558—354 **7 Claims**

1. A process for preparing a single enantiomer, either R or S in enantiomeric excess of about 90% or greater, of a compound having the formula

$$R'—NH—(CH_2)_3—C^*(Ar)(CN)—R \quad (I)$$

the process comprising reacting together

$$R—CH(AR)—CN \text{ and } X—(CH_2)_3—A$$

to give a compound having the formula

$$X—(CH_2)_3—C(Ar)(CN)—R, \quad (II)$$

reacting compound II with $R'NH_2$ to give a compound having the formula

$$R'—NH—(CH_2)_3—C(Ar)(CN)—R \quad (III)$$

and resolving compound III into a single enantiomer thereof by reacting compound III with a chiral acid, wherein * denotes a chiral center, Ar is aryl, R and R' are each independently C_{1-20} alkyl, X is a halo atom and A is a leaving group which, upon reaction of R—CH(Ar)—CN and X—$(CH_2)_3$—A, leaves X—$(CH_2)_3$—A as A.

5,910,602

METHOD FOR PREPARING 3-AMINO SUBSTITUTED CROTONATES

Joshua Anthony Chong, Lansdale; Fereydon Abdesken, Dresher, and Peter Osei-Gyimah, Horsham, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

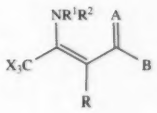
Continuation-in-part of application No. 08/748,750, Nov. 14, 1996, Pat. No. 5,777,154, Provisional application No. 60/018,084, May 22, 1996. This application Apr. 29, 1998, Appl. No. 69,395.

Int. Cl.[6] C07C *229/30*

U.S. Cl. 560—172 **11 Claims**

1. A method for the preparation in a yield greater than 80% of a 3-amino-4,4,4-trihalocrotonate compound of formula I

I



wherein

X is fluoro or chloro;

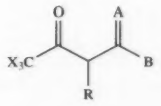
A is O, S or NR^5;

B is R^6, OR^6, SR^6 or NR^3R^4;

R, R^1, R^2, R^3, R^4, R^5 and R^6 are each independently H, $(C_1–C_6)$alkyl, $(C_2–C_6)$alkenyl, $(C_2–C_6)$alkynyl, phenyl or phen$(C_1–C_6)$alkyl; or $(C_1–C_6)$alkyl, $(C_2–C_6)$alkenyl, $(C_2–C_6)$alkynyl, phenyl or phen$(C_1–C_6)$alkyl substituted with one or more groups independently selected from halo, CN, NO_2, $(C_1–C_6)$alkyl, $(C_2–C_6)$alkenyl, $(C_2–C_6)$alkynyl, phenyl, phen$(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy, $(C_2–C_6)$alkenyloxy, and phenoxy; or R^1 and R^2, and R^3 and R^4 may each independently be taken together with the nitrogen to which they are attached to form a five, six, or seven membered heterocyclic ring; or when A is NR^5 and B is OR^6 or SR^6, R^5 and R^6 may be taken together with the A=C–B group to which they are attached to form a five, six, or seven membered heterocyclic ring; or when A is NR^5 and B is NR^3R^4, R^3 or R^4 and R^5 may be taken together with the A=C–B group to which they are attached form a five, six, or seven membered heterocyclic ring;

consisting of forming and heating a mixture comprising solvent, a 4,4,4-trihaloacetoacetate derivative of formula II

II



wherein

X, R, A and B are the same as defined for formula I, and an amine or ammonium salt of a weak acid of the formula

$$R^1R^2NH_2{}^+Y^-$$

wherein

R^1 and R^2 are the same as defined for formula I and

Y^- is the anion of a weak acid.

5,910,603

ESTERIFICATION OF (METH)ACRYLIC ACID WITH AN ALKANOL

Heinrich Aichinger, Mannheim; Matthias Geisendörfer, Neustadt; Holger Herbst, Frankenthal, and Gerhard Nestler, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 23, 1996, Appl. No. 701,989

Claims priority, application Germany, Sep. 28, 1995, 195 36 191

Int. Cl.[6] **C07C** *69/52*

U.S. Cl. 560—205 **24 Claims**

1. A process comprising:

1) esterifying (meth)acrylic acid with an alkanol in the presence of an acidic esterification catalyst,

2) separating unconverted starting compounds, a (meth)acrylate and an oxyester-containing bottom product by distillation;

3) heating a composition consisting essentially of said oxyester-containing bottom product and an acid, to from 150–250° C. at a pressure such that cleavage products formed from oxyesters contained in said bottom product are isolated concurrent with cleavage.

5,910,604

PURIFICATION PROCESS

Stephen Martin Brown, Upper Cumberworth; Brian David Gott, Skelmanthorpe, both of United Kingdom; Thomas Gray, and Seyed Mehdi Tavana, both of Daphne, Ala., assignors to Zeneca Limited, London, United Kingdom

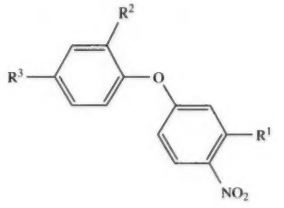
Continuation-in-part of application No. 08/712,536, Sep. 11, 1996. This application Mar. 13, 1997, Appl. No. 816,930.

Claims priority, application United Kingdom, Sep. 13, 1995, 9518704

Int. Cl.[6] **C07C** *205/59*

U.S. Cl. 562—435 **19 Claims**

1. A process for the purification of a compound of general formula I:



wherein

R^1 is hydrogen or C_1–C_6 alkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl, any of which may optionally be substituted with one or more substituents selected from halogen and hydroxy; or $COOR^4$, COR^6, $CONR^4R^5$ or $CONHSO_2R^4$;

R^4 and R^5 independently represent hydrogen or C_1–C_4 alkyl optionally substituted with one or more halogen atoms;

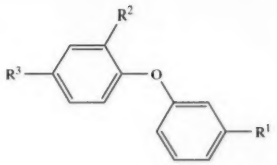
R^6 is a halogen atom or a group R^4;

R^2 is hydrogen or halo; and

R^3 is C_1–C_4 alkyl, C_2–C_4 alkenyl or C_2–C_4 alkynyl, any of which may optionally be substituted with one or more halogen atoms; or halo; or, where appropriate, a salt thereof;

from the crude product resulting from the nitration of a compound of general formula II:

II



wherein R^1, R^2 and R^3 are as defined for general formula I, the crude product containing less than 85% of a compound of formula (I) and more than 15% of impurities comprising one or more isomers or di-nitrated analogues thereof; the process comprising dissolving the mixture in a suitable crystallising solvent selected from an aromatic hydrocarbon, a haloaromatic, a mixture of any of the above solvents or a mixture containing an aromatic hydrocarbon with a co-solvent comprising an aliphatic hydrocarbon, ester, ether, nitrile or a halohydrocarbon, and recrystallising the product from the resulting crystallisation solution wherein the crystallisation solution contains not more than 25% loading of the compound of general formula I and the temperature to which the solution is cooled for crystallisation is not greater than about 30° C.; wherein, after the addition of the crystallising solvent but before recrystallisation, the crystallisation solution is subjected to at least one wash with an aqueous solution having an acid pH.

5,910,605

PROCESS FOR THE PREPARATION OF 3-HYDROXY-2-METHYLBENZOIC ACID AND 3-ACETOXY-2-METHYLBENZOIC

Robert Cosmo, Darmstadt, and Andreas Dierdorf, Frankfurt, both of Germany, assignors to Clariant GmbH, Frankfurt, Germany

Filed Feb. 6, 1998, Appl. No. 19,864

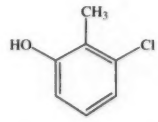
Claims priority, application Germany, Feb. 11, 1997, 197 04 885

Int. Cl.[6] **C07C** *65/00*

U.S. Cl. 562—473 **14 Claims**

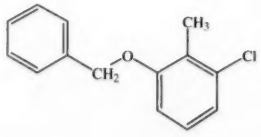
1. A process for the preparation of 3-hydroxy-2-methylbenzoic acid and 3-acetoxy-2-methylbenzoic acid, which comprises reacting 3-chloro-2-methylphenol (3)

3

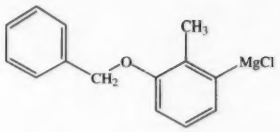


with benzyl chloride to give 2-benzyloxy-6-chlorotoluene (4)

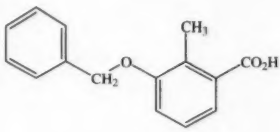
4



subjecting this to a Grignard reaction with magnesium to give (3-benzyloxy-2-methylphenyl)magnesium chloride (5)



reacting this with CO_2 to give 3-benzyloxy-2-methylbenzoic acid (6)



hydrogenating this or its alkali metal salts in the presence of a hydrogenation catalyst to give 3-hydroxy-2-methylbenzoic acid (2) and optionally acetylating this to give 3-acetoxy-2-methylbenzoic acid.

5,910,606

PROCESS FOR MAKING α,β-UNSATURATED CARBOXYLIC ACIDS

Joseph Foricher, Mulhouse, France, and Rudolf Schmid, Arlesheim, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 10, 1997, Appl. No. 780,952

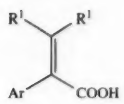
Claims priority, application Switzerland, Jan. 31, 1996, 247/96

Int. Cl.[6] C07C *63/64*

U.S. Cl. 562—495 **11 Claims**

1. A process for making a compound of formula I

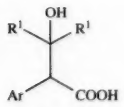
I



wherein R^1 signifies C_1–C_5-alkyl; and Ar signifies an aryl group which is optionally substituted by one or more substituents selected from the group consisting of halogen, phenyl, C_1–C_5-alkyl, C_1–C_5-alkoxy, perfluorinated C_1–C_5-alkyl and pertluorinated C_1–C_5-alkoxy, comprising

(a) dehydrating a compound of formula III

III



wherein R^1 and Ar as set forth above, in the presence of a strong acid selected from concentrated sulphuric acid or concentrated polyphosphoric acid at a temperature of from about 0 to about 40° C.; and

(b) recovering the compound of formula I.

5,910,607

PROCESS FOR PRODUCING ACRYLIC ACID

Yasuyuki Sakakura; Masahiko Yamagishi, and Hirochika Hosaka, all of Yokkaichi, Japan, assignors to Mitsubishi Chemical Corp., Tokyo, Japan

Filed Jul. 28, 1995, Appl. No. 508,697

Claims priority, application Japan, Aug. 4, 1994, 6-201522

Int. Cl.[6] C07C *51/21;51/235*

U.S. Cl. 562—532 **18 Claims**

1. In a process for producing acrylic acid, wherein propylene and/or acrolein is catalytically oxidized with molecular oxygen in a vapor phase and the gas resulting from the oxidation is cooled and/or absorbed in or scrubbed with water to form a crude aqueous acrylic acid, followed by azeotropic distillation for dehydration to remove water with an entrainer of a boiling point of no higher than 130° C. on the crude aqueous acrylic acid which may have, upon necessity, undergone removal of aldehydes contained therein to produce acrylic acid purified in that the crude aqueous acrylic acid is substantially dehydrated, the improvement which comprises conducting the azeotropic distillation under such conditions that concentrations of the entrainer and water in the bottom product of a distillation column for the azeotropic distillation for dehydration are from 5% to 30% by weight and no higher than 0.5% by weight, respectively.

5,910,608

CATALYST CONSISTING OF A HOLLOW CYLINDRICAL CARRIER HAVING A CATALYTICALLY ACTIVE OXIDE MATERIAL APPLIED TO THE OUTER SURFACE OF THE CARRIER, AND PROCESS FOR USING SAID CATALYST

Andreas Tenten, Maikammer; Peter Weidlich, Mannheim, and Gerd Linden, Heidelberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of application No. 08/562,595, Nov. 24, 1995, Pat. No. 5,677,261. This application Jun. 4, 1997, Appl. No. 868,801.

Claims priority, application Germany, Nov. 29, 1994, 44 42 346

Int. Cl.[6] C07C *51/235;* **C01G** *39/02*

U.S. Cl. 562—532 **4 Claims**

1. A coated catalyst consisting of a hollow cylindrical carrier having a length of from 2 to 10 mm, an external diameter from 4 to 10 mm and a wall thickness of from 1 to 4 mm and a catalytically active oxide material which is applied to the outer surface of the carrier and is of the formula I

$$Mo_{12}V_aX_b^1X_c^2X_d^3X_e^4X_f^5X_g^6O_n \quad (I),$$

where

X^1 is W, Nb, Ta, Cr or Ce,

X^2 is Cu, Ni, Co, Fe, Mn or Zn,

X^3 is Sb or Bi,

X^4 is at least one or more alkali metals,

X^5 is at least one or more alkaline earth metals,

X^6 is Si, Al, Ti or Zr,

a is from 1 to 6,

b is from 0.2 to 4,

c is from 0.5 to 18,

d is from 0 to 40,

e is from 0 to 2,

f is from 0 to 4,

g is from 0 to 40 and

n is a number which is determined by the valency and frequency of the elements in I which differ from oxygen,

the applied catalytically active oxide material

being applied in a coat thickness of from 10 to 1000 μm,

and having a specific, catalytically active surface area of from 20 to 30 m^2/g and

an abrasion of <10% by weight in the turntable abrasion test.

5,910,609

COMPOUNDS

Colin Campion; Alan Hornsby Davidson, both of Oxon; Jonathan Philip Dickens, Buckinghamshire, and Michael John Crimmin, Ascot, all of United Kingdom, assignors to British Biotech Pharmaceuticals Limited, Oxford, United Kingdom

Division of application No. 07/820,664, filed as application No. PCT/GB90/01117, Jan. 16, 1992. This application Apr. 5, 1995, Appl. No. 417,095.

Claims priority, application United Kingdom, Aug. 24, 1989, 8919251

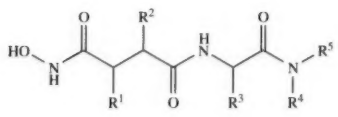
This patent is subject to a terminal disclaimer.

Int. Cl.[6] C07D *53/02;53/04*

U.S. Cl. 562—621 **8 Claims**

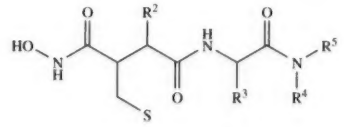
1. A compound of formula I:

(I)



wherein

R^1 represents a hydrogen atom or a C_1–C_6 alkyl, C_1–C_6 alkenyl, phenyl, phenyl (C_1–C_6)alkyl, C_1–C_6 alkythiomethyl, phenylthiomethyl, substituted phenylthiomethyl, phenyl(C_1–C_6)alkythiomethyl, pyridine-2-thiomethyl, pyridine-4-thiomethyl, thiophene-2-thiomethyl or pyrimidine-2-thiomethyl group wherein substituted refers to up to four substituents each of which independently may be C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, thiol, C_1–C_6 alkylthiol, amino, halo, triflouromethyl, nitro, —COOH, —$COONH_2$ or —$CONHR^A$, wherein R^A represents a C_1–C_6 alkyl group or the side chain of the amino acid alanine, valine, leucine, isoleucine, phenylalanine, tryptophan, methionine, glycine, serine, threonine, cysteine, tyrosine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, arginine or histidine; or R^1 represents —S—R^x wherein R^x represents a group;



R^2 represents a hydrogen atom or a C_1–C_6 alkyl, C_1–C_6 alkenyl, phenyl (C_1–C_6) alkyl, cycloalkyl (C_1–C_6) alkyl, or cycloalkenyl (C_1–C_6) alkyl;

R^3 represents an amino acid side chain or a C_1–C_6 alkyl, benzyl, (C_1–C_6) alkoxylbenzyl, benzyloxy (C_1–C_6) alkyl or benzyloxybenzyl group;

R^4 represents a hydrogen atom or a methyl group;

R^5 represents a group $(CH_2)_nA$;

n is an integer from 1 to 6;

A represents a hydroxy, (C_2–C_7)acyloxy, (C_1–C_6)alkylthio, phenylthio, or (C_2–C_7)acylamino;

or a pharmaceutically acceptable salt or N-oxide or where the compound is a thio-compound, a sulphoxide or sulphone thereof.

5,910,610

TRIPHENYLAMINE DERIVATIVE, CHARGE-TRANSPORTING MATERIAL COMPRISING THE SAME, AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Tohru Kobayashi; Yoshimasa Matsushima; Hiroshi Sugiyama, and Toshimitsu Hagiwara, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

PCT No. PCT/JP96/00505, § 371 Date Sep. 2, 1997, § 102(e) Date Sep. 2, 1997, PCT Pub. No. WO96/26916, PCT Pub. Date Jun. 9, 1996

PCT Filed Mar. 1, 1996, Appl. No. 894,878

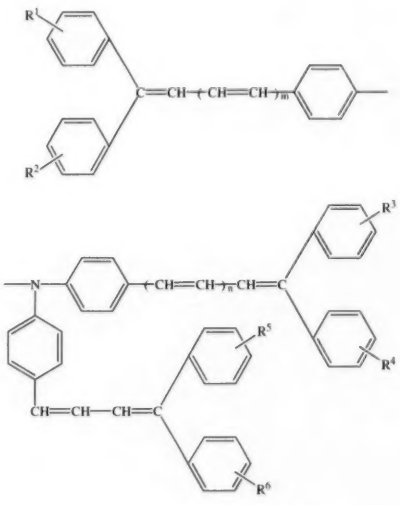
Claims priority, application Japan, Mar. 1, 1995, 7-065270

Int. Cl.[6] C07C *211/13*

U.S. Cl. 564—315 **4 Claims**

1. A novel triphenylamine derivative, represented by the following general formula (1):

(1)



wherein R^1, R^2, R^3, R^4, R^5 and R^6 may be the same or different and each represent a hydrogen atom, a lower alkyl group, an alkoxy group, a phenoxy group, a halogen atom or an aryl group which may have a substituent group; and m and n each represents 0 or 1.

5,910,611

AQUEOUS ALKANOLAMINES USING AN ELECTRODIALYSIS CELL WITH AN ION EXCHANGE MEMBRANE

Richard Alan Gregory, Jr., Belle Mead, N.J., and Martin Frank Cohen, Yorktown Heights, N.Y., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of application No. 08/079,708, Jun. 18, 1993, abandoned, which is a continuation of application No. 07/588,939, Sep. 27, 1990, abandoned, which is a continuation of application No. 07/401,865, Sep. 1, 1989, abandoned, which is a continuation of application No. 07/036,486, Apr. 9, 1987, abandoned. This application May 24, 1995, Appl. No. 449,254.

Int. Cl.[6] C07C *209/84;209/86*

U.S. Cl. 564—497 **21 Claims**

1. In a method for removing carbon dioxide and/or hydrogen sulfide, plus other acid gases, from a gas stream by passing the gas stream through an aqueous alkanolamine solution such that carbon

dioxide and/or hydrogen sulfide, plus other acid gases are removed from the gas stream, and heat-stable alkanolamine salts are formed in the aqueous alkanolamine solution by the reaction of alkanolamine and said other acid gases, and stripping substantially all of said acid gases from the aqueous alkanolamine solution, the improvement comprising:

(a) treating at least part of the stripped aqueous alkanolamine solution with a base whereby about 95 to about 98% of the alkanolamine salt stoichiometry is neutralized and converted into alkanolamine and at least one simple salt;

(b) removing precipitate which may be formed; and

(c) electrodialyzing the solution treated in step (a) in an electrodialysis cell containing at least two at least partially cross-linked, polymeric ion exchange membranes to remove at least about 74% by weight of the salt from the solution by selectively passing ions of the salt across the membranes while retaining alkanolamine in the solution passing through the cell;

whereby partially or completely purified alkanolamine in aqueous solution form is obtained, wherein the amount of the partially or completely purified alkanolamine is recovered in an amount greater than about 92% by weight of the total amount of alkanolamine treated.

2. In a process for removing acid gases from a gas stream by scrubbing the gas stream with an aqueous alkanolamine solution thereby forming a rich alkanolamine solution containing absorbed acid gases and at least one heat stable salt, and stripping the rich solution of absorbed acid gases thereby providing a lean aqueous alkanolamine solution contaminated with said heat stable salt, the improvement which comprises:

(a) treating at least part of the lean aqueous alkanolamine solution with a base in an amount sufficient to convert about 95 to about 98% based on stoichiometry of the heat stable salt to alkanolamine and at least one simple salt;

(b) removing precipitate which may be formed; and

(c) electrodialyzing the lean solution treated in step (a) in an electrodialysis cell containing at least two at least partially cross-linked, polymeric ion exchange membranes to remove at least about 74% by weight of the salt from the solution by selectively passing ions of the salt across the membranes while retaining alkanolamine in the solution passing through the cell;

whereby partially or completely purified alkanolamine in aqueous solution is obtained, wherein the amount of the partially or completely purified alkanolamine is recovered in an amount greater than about 92% by weight of the total amount of alkanolamine treated.

5,910,612

PREPARATION OF ANHYDROUS 2-AMINO-1-METHOXYPROPANE

Joachim Simon, Mannheim; Andreas Henne, Neustadt, and Heinz Lingk, Bobenheim-Roxheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 21, 1998, Appl. No. 82,543

Int. Cl.[6] **C07C** *209/02*

U.S. Cl. 564—497 **9 Claims**

1. A process for preparing anhydrous 2-amino-1-methoxypropane by

(a) admixing a 2-amino-1-methoxypropane-containing water-containing reaction mixture, obtained from the reaction of 1-methoxy-2-propanol with ammonia on a catalyst, with sodium hydroxide solution, forming an aqueous phase containing sodium hydroxide solution and a 2-amino-1-methoxypropane-containing phase,

(b) separating off the 2-amino-1-methoxypropane-containing phase from the aqueous phase and

(c) distilling the 2-amino-1-methoxypropane-containing phase, an azeotrope of water and 2-amino-1-methoxypropane, which is recycled to step (a) or (b), first being produced and anhydrous 2-amino-1-methoxypropane then being produced.

5,910,613

METHOD OF PRODUCTION OF AROMATIC ALDEHYDES CATALYZED BY TRIFLIC ACID

David Anthony Schiraldi, Charlotte, N.C., and Jeffrey Charles Kenvin, Alpharetta, Ga., assignors to HNA Holdings, Inc., Charlotte, N.C.

Filed May 6, 1998, Appl. No. 73,290

Int. Cl.[6] **C07C** *45/00*

U.S. Cl. 568—428 **24 Claims**

1. A process for the production of aldehyde by carbonylation of an arene using triflic acid comprising:

reacting an arene with carbon monoxide in the presence of triflic acid for a reaction time of less than 1.5 hours, at a carbon monoxide partial pressure ranging from about 700 to about 2000 psig, and at a temperature between 0 and 50° C., produce aromatic aldehydes and by-products.

5,910,614

PROCESS FOR PREPARING PERFLUOROPOLYETHERS

Stefano Turri, Brugherio; Claudio Tonelli, Concorezzo, and Carlo Pogliani, Cesano Maderno, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Jul. 30, 1997, Appl. No. 903,060

Claims priority, application Italy, Aug. 2, 1996, MI96A1672

Int. Cl.[6] **C07C** *43/11;* **B01D** *16/08*

U.S. Cl. 568—615 **11 Claims**

1. A process for separating bifunctional macromolecules having hydroxylic termination from non functional and/or monofunctional macromolecules having hydroxylic termination contained in admixture in perfluoropolyoxyalkylenes having the structure:

$$X_1—O—Rf—Y \quad (I)$$

wherein

Rf is perfluoropolyoxyalkylene chain having a number average molecular weight of 500–10,000 comprising units (CF_2CF_2O), (CF_2O), (C_3F_6O), $(CF_2(CF_2)_zCF_2O)$, and $—CR_4R_5CF_2CF_2O—$ wherein R_4 and R_5 are equal to or different from each other and are selected from H, Cl or perfluoroalkyl, said units being randomly distributed along the chain;

z is an integer equal to 1 or 2;

X_1 and Y are equal to or different from each other, and are $CFXCH_2OH$ functional terminals, wherein X is F or CF_3, non functional terminals $—CF_3$, $—CF_2Cl$, CF_2CF_2Cl, $—CF_2Br$, and $—CF_2CF_3$ comprising the following steps:

1) adding the macromer (I) to a suspension of stationary phase in a polar solvent, said stationary phase being commonly employed in chromatographic techniques, and being formed by a compound containing sites or active groups capable of forming bonds or interactions of polar type, or hydrogen bonds, with the hydroxylic terminals of perfluoropolyoxyalkylenes contained in the mixture of formula (I), the macromer/stationary phase ratio ranging from 2/3 to 1/1 w/w; solvent/(stationary phase+ macromer) ratio ranging from 0.8/1 to 1.5/1 v/w;

2) evaporating the solvent, until a loose and dry powder is obtained;

3) conducting a first extraction with a low polarity fluorinated solvent and separating the phases by filtering;

4) conducting a second extraction of the stationary phase with a hydrogen-saturated polar solvent and separating the phases by filtering;

5) obtaining the macromer fraction having high bifunctionality degree by concentrating the liquid phase after said second extraction.

5,910,615

PRODUCING $CF_3CH_2CF_3$ AND/OR $CF_3CH{=}CF_2$ BY THE CONVERSION OF α-HYDROPERFLUOROISOBUTYRIC ACID COMPOUNDS

Scott C. Jackson, Kennett Square, Pa.; Paul Raphael Resnick, Cary, N.C., and Steven H. Swearingen, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US96/05219, § 371 Date Oct. 8, 1997, § 102(e) Date Oct. 8, 1997, PCT Pub. No. WO96/32364, PCT Pub. Date Oct. 17, 1996

Continuation of application No. 08/421,095, Apr. 13, 1995, Pat. No. 5,594,159. This PCT application Apr. 15, 1996, Appl. No. 930,809.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] C07C *19/08*

U.S. Cl. 570—142 **17 Claims**

1. A process for producing at least one compound selected from the group consisting of 1,1,1,3,3,3-hexafluoropropane and 1,1,1,3,3-pentafluoropropene, comprising:

(1) providing a mixture comprising water and at least one carboxy compound selected from the group consisting of $(CF_3)_2CHCO_2H$ and its water soluble salts, said mixture having a pH of less than about 4; and

(2) reacting the mixture provided in (1) at a temperature in the range of from about 75° C. to 500° C.

5,910,616

VAPOR PHASE PROCESS FOR PREPARING FLUORINATED ALIPHATIC COMPOUNDS

C. Bradford Boyce, Baton Rouge, and Randolph K. Belter, Zachary, both of La., assignors to LaRoche Industries, Inc., Atlanta, Ga.

Filed Jun. 22, 1998, Appl. No. 100,997

Int. Cl.[6] C07C *17/08*

U.S. Cl. 570—167 **10 Claims**

1. A process for preparing a fluorinated aliphatic hydrocarbon said process comprising reacting a C_1 to C_6 hydrocarbon substituted with at least one halo selected from the group consisting of chloro, bromo and iodo in the vapor phase at a temperature from about 75° to about 150° C. with hydrogen fluoride and a catalytically effective amount of at least one antimony compound having the formula

$$Sb_uCl_vM_xX_yF_z{\cdot}nHF$$

where n is 0 or an integer that is at least 1; M is selected from the group consisting of a metal from Group IIIa, IIIb, IVa, IVb, Va, Vb, VIa, VIb, VIIb and VIII of the Periodic Table of the Elements; X is chloro, bromo or iodo; u is an integer that is the valence of antimony; v is an integer that is the valence of M; w, x and z are an integer of at least 1; y is 0 or an integer of at least 1; and $(w{\cdot}u)+(x{\cdot}v)= y+z$ said at least one antimony compound being a nonvolatile solid at the temperature of the reaction, for a time sufficient to form said fluorinated aliphatic hydrocarbon.

5,910,617

PROCESS FOR THE PREPARATION OF ALIPHATIC OR CYCLOALIPHATIC CHLORIDES

Loic Lecomte; Serge Metge, and Denis Souyri, all of Toulouse, France, assignors to Societe Nationale Des Poudres Et Explosifs, Paris Cedex, France

Filed Jun. 18, 1998, Appl. No. 99,491

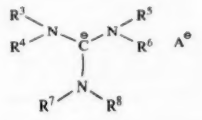
Claims priority, application France, Jul. 16, 1997, 97 09031

Int. Cl.[6] C07C *17/16;22/00;43/18;255/00*

U.S. Cl. 570—261 **12 Claims**

1. Process for the preparation of chlorides of substituted or unsubstituted, saturated or unsaturated, aliphatic or cycloaliphatic hydrocarbons by reaction of the corresponding mono- or polyalcohol with phosgene or thionyl chloride, characterized in that the reaction is carried out in the presence of at least one catalyst chosen from the group consisting of

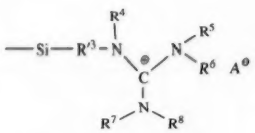
(1) hexasubstituted guanidinium halides and their hydrohalides of formula (II):



(II)

in which the R^3 to R^8 radicals, which are identical or different, represent substituted or unsubstituted, linear or branched, C_1 to C_{12} alkyl groups and/or substituted or unsubstituted, C_5 to C_6 cycloaliphatic groups and A represents a chlorine or bromine atom or an HCl_2 or HBr_2 group, and

(2) hexasubstituted guanidinium halides and their hydrohalides, grafted via one of their radicals to a silica-based support, of formula (III):



(III)

in which R^4 to R^8 and A radicals have the above meanings and R'^3 represents a C_2 to C_{10} alkylene group.

5,910,618

PROCESS FOR PREPARING 2,3-DIMETHYL-2-BUTENE

Kotohiro Nomura, Osaka; Michio Yamamoto, Shiga, and Masashi Komatsu, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of application No. 08/331,586, filed as application No. PCT/JP94/00346, Mar. 4, 1994, abandoned. This application Mar. 19, 1997, Appl. No. 821,572.

Int. Cl.[6] C07C *2/04*

U.S. Cl. 585—510 **11 Claims**

1. A process for preparing 2,3-dimethyl-2-butene consisting essentially of isomerizing 2,3-dimethyl-1-butene by adding at least one acid selected from the group consisting of aqueous solutions of sulfuric acid having a concentration of 90 to 98%, aliphatic sulfonic acids, aromatic sulfonic acids and halogenated sulfonic acids to 2,3-dimethyl-1-butene.

5,910,619

PROCESS FOR PRODUCING α-OLEFIN OLIGOMERS

Hisao Urata; Takayuki Aoshima, both of Yokohama; Toshiyuki Oshiki, Ikeda; Jun Takahara, Yokohama; Shinji Iwade, Kurashiki; Yoshiaki Nanba, Kurashiki; Yoshitaka Araki, Kurashiki; Hirofumi Nakamura, Kurashiki, and Takeshi Okano, Kurashiki, all of Japan, assignors to Mitsubishi Chemical Corporation, Japan

Filed Jun. 20, 1995, Appl. No. 493,234

Claims priority, application Japan, Jun. 21, 1994, 6-139024; Sep. 13, 1994, 6-218477; Mar. 2, 1995, 7-068598; Mar. 2, 1995, 7-068599

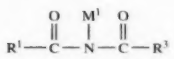
Int. Cl.[6] C07C *2/24;2/26*

U.S. Cl. 585—513 **35 Claims**

1. A process for producing an α-olefin oligomer, which comprises oligomerizing an α-olefin in a hydrocarbon reaction solvent in the presence of a catalytically effective amount of a chromium-based catalyst system consisting of (a) a chromium compound, (b) a nitrogen-containing compound selected from the group consist-

ing of pyrroles, pyrrole derivatives and compounds represented by the following formula (1-A):

(1-A)



wherein M^1 represents a hydrogen atom or a metal element in groups IA, IIA, IB and IIIA of the Periodic Table, each of R^1 and R^3 represents a hydrogen atom, an alkyl group having 1 to 30 carbon atoms, an alkenyl group having 1 to 30 carbon atoms, or an aralkyl group having 1 to 30 carbon atoms, (c) an alkylaluminum compound of the formula

$$R^1_mAl(OR^2)_nH_p$$

wherein R^1 and R^2 are each a hydrocarbon group having 1 to 15 carbon atoms and R^1 and R^2 may be the same or different from each other; in, n, and p are the numbers defined by $0<m\leqq 3$, $0\leqq n<3$ and $0\leqq p<3$ respectively, and $m+n+p=3$ and (d) a halogen-containing compound containing an element selected from Groups IIIA, IIIB, IVA, IVB, VA, VB or VIB of the Periodic Table,

provided that before the α-olefin, the chromium compound (a), the nitrogen-containing compound (b), the alkylaluminum compound (c) and the halogen-containing compound (d) come into contact with each other, the chromium compound (a) and the alkylaluminum compound (c) do not previously contact each other, and when the oligomerization of the α-olefin takes place, the chromium compound (2) and the alkylaluminum compound (c) are supplied simultaneously and *separately into the reaction system,*

wherein the oligomerization is conducted at a temperature of from 0 to 250° C., under a pressure of from 3 to 250 kg/cm^2, the α-olefin concentration in the reaction solvent is of from 5 to 100 mol %, the chromium compound concentration is of from 1×10^{-7} to 0.5 mol per liter of the reaction solvent, and the molar ratio of compounds (a):(b):(c):(d) of 1:0.1 to 100:0.1 to 500:0.1 to 100.

5,910,620

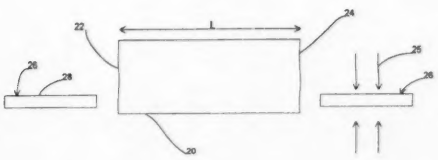
FIRE-RATED GLASS AND METHOD FOR MAKING SAME

William F. O'Keeffe, San Francisco, and Mason Scott Foote, Sausalito, both of Calif., assignors to O'Keefe's, Inc., San Francisco, Calif.

Filed Nov. 3, 1995, Appl. No. 552,719

Int. Cl.^{6} C03B *27/00*

U.S. Cl. 65—60.5 **19 Claims**



1. A method for making a fire-rated glass comprising the steps of:

selecting a low-E glass;

subjecting the low-E glass to a supertempering treatment; and

wherein said supertempering treatment includes treating the low-E glass in a furnace with a temperature of at least about 1125° F. and quenching the low-E glass with a fluid at a pressure of at least about 55 inches of water.

5,910,621

TREATMENT OF TITANIFEROUS MATERIALS

Harold Robert Harris, Leeman; Halil Aral, Elwood; Warren John Bruckard, North Balwyn; David Edward Freeman, North Dandenong; Martin Richard Houchin, Pascoe Vale; Kenneth Joun McDonald, Glen Waverley; Graham Jeffrey Sparrow, Vermont South, and Ian Edward Grey, Black Rock, all of Australia, assignors to RGC Mineral Sands, Australia

Continuation of application No. 08/733,786, Oct. 18, 1996, abandoned, which is a division of application No. 08/379,554, filed as application No. PCT/AU93/00381, Jul. 28, 1993, Pat. No. 5,578,109. This application Sep. 19, 1997, Appl. No. 938,029.

Claims priority, application Australia, Jul. 31, 1992, 3876/92; Dec. 16, 1992, 6401/92

This patent is subject to a terminal disclaimer.

Int. Cl.^{6} C22B *60/02*

U.S. Cl. 75—399 **34 Claims**

1. A process for treating iron-containing titanferous material by reducing iron in the titaniferous material largely to metallic iron in a reducing atmosphere in a kiln, thereby producing a so-called reduced titaniferous material, comprising feeding the titaniferous material, a reductant, and one or more reagents selected to enhance the accessibility of at least one of the radionuclide daughters in the titaniferous material, to the kiln, maintaining an elevated temperature in the kiln, the reagent(s) being selected to form a phase at said elevated temperature which disperses onto the surfaces of the titaniferous material and incorporates the radionuclides and said one or more radionuclide daughters, recovering a mixture which includes the reduced titaniferous material and said phase from the kiln at a discharge port, and treating the mixture to remove thorium and/or uranium and/or one or more of the radionuclide daughter.

5,910,622

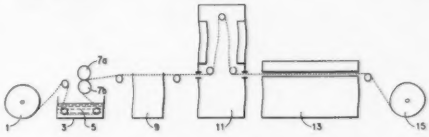
METHOD FOR TREATING FIBROUS CELLULOSIC MATERIALS

George L. Brodmann, Port St. Lucie, Fla., assignor to DCV, Inc., Wilmington, Del.

Continuation-in-part of application No. 08/738,996, Oct. 29, 1996, abandoned. This application Jun. 2, 1997, Appl. No. 867,132.

Int. Cl.^{6} D06M *13/352;13/358*

U.S. Cl. 8—182 **4 Claims**



1. A method for improving the surface properties of cellulose-containing paper comprising:

(1) applying to at least one surface of the cellulose-containing paper a cationic aqueous treating solution containing (a) a heterocyclic polyhydroxy compound selected from the group consisting of dimethyldihydroxy ethyleneurea, dimethyloldihydroxy ethyleneurea, trimethylol melamine, hexamethylol melamine and mixtures thereof, (b) choline chloride and (c) crosslinking catalyst to effect at least 60% wt. pickup of the treating solution onto the material, the concentration in the treating solution of heterocyclic polyhydroxy compound being 5–100 g/L, the concentration of choline chloride being 40–600 g/L and the weight ratio of heterocyclic polyhydroxy compound to choline chloride being 0.1–6;

(2) heating the thusly treated paper from step (1) to a temperature of 250–315 F. (121–157 C.) to effect removal of water therefrom by evaporation, so that the water content is reduced to a level no higher than 1% wt.;

(3) further heating the dried paper from step (2) to a temperature of 320–400 F. (169–240 C.) for 3–180 seconds to effect

crosslinking of the cyclic polyhydroxy compound with the cellulose fibers in the paper; and

(4) cooling the crosslinked cellulosic paper.

5,910,623

MIXTURES OF SULFO-CONTAINING 1:2 METAL COMPLEXES WITH VINYL POLYMERS

Knut Kessel, Mannheim; Manfred Patsch, Wachenheim; Manfred Herrmann, Ludwigshafen; Kurt Reiner; Jörg Jessen, both of Speyer, and Matthias Wiesenfeldt, Dannstadt-Schauernheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 13, 1997, Appl. No. 910,669

Claims priority, application Germany, Aug. 20, 1996, 19633484

Int. Cl.[6] D06P *1/39;1/90;3/32*

U.S. Cl. 8—402 **12 Claims**

1. A process for dyeing a substrate selected from the group consisting of wood, paper, leather and fir, comprising contacting said substrate with a liquid mixture comprised of a 1:2 metal complex dye which contains a sulfonic acid group or a salt thereof, and poly-N-vinylpyrrolidone or a copolymer of N-vinylpyrrolidone and vinyl acetate; and a solvent, wherein said 1:2 metal complex dye contains less than 3% by weight salt.

5,910,624

DISPERSE DYESTUFF MIXTURES

Klaus-Wilfried Wanken, Leverkusen, and Karl-Ulrich Bühler, Alzenau, both of Germany, assignors to DyStar Textilfarben GmbH & Co. Deutschland KG, Germany

Filed Aug. 27, 1997, Appl. No. 919,005

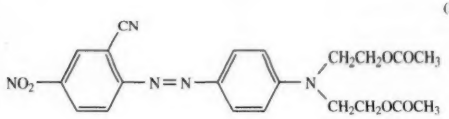
Claims priority, application Germany, Sep. 9, 1996, 196 36 380

Int. Cl.[6] D06P *3/87;3/36;1/18*

U.S. Cl. 8—533 **11 Claims**

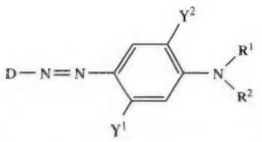
1. A disperse dyestuff mixture comprising a dyestuff of the formula (I)

(I)



and at least one dyestuff which differs therefrom, of the formula (II)

(II)



wherein

D represents 2-chloro-4-nitrophenyl or

D denotes the radical of a diazo component from the group consisting of 5, 6-dichlorobenzothiazol-2-yl, 6,7-dichlorobenzothiazol-2-yl, 6-nitrobenzothiazol-2-yl and 5-nitrothiazol-2-yl,

Y^1 represents acylamino, methoxy- or ethoxyacetamino, 2-methoxy- or -ethoxy-propionylamino, 2-chloropropionylamino or methylsulfonylamino,

Y^2 represents hydrogen, and

R^1 and R^2 independently of one another denote unsubstituted or substituted C_1–C_4-alkyl.

5,910,625

INBRED CORN PLANT 3AZA1 AND SEEDS THEREOF

Dale S. Wickersham, Holt, Mich., assignor to Dekalb Genetics Corporation, Dekalb, Ill.

Filed Feb. 1, 1996, Appl. No. 595,549

Int. Cl.[6] A01H *5/00;4/00;1/00;* **C12N** *5/04*

U.S. Cl. 800—200 **35 Claims**

1. Inbred corn seed of the inbred corn plant designated 3AZA1, a sample of the seed of said inbred corn plant designated 3AZA1 having been deposited under ATCC Accession No. 203516.

5,910,626

ACETYL-COA CARBOXYLASE COMPOSITIONS AND METHODS OF USE

Robert Haselkorn, and Piotr Gornicki, both of Chicago, Ill., assignors to ARCH Development Corporation, Chicago, Ill.

Continuation-in-part of application No. 07/956,700, Oct. 2, 1992, Pat. No. 5,539,092. This application Apr. 14, 1995, Appl. No. 422,560.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] C12N *5/00;15/00;* **A01H** *1/04;* **C07H** *21/04*

U.S. Cl. 800—205 **52 Claims**

1. An isolated nucleic acid segment comprising a gene that encodes a polypeptide comprising the sequence of SEQ ID NO:2. SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10 SEQ ID NO:12. or SEQ ID NO:20.

5,910,627

PH GENES AND THEIR USES

George S. Chuck, Berkeley, Calif.; Hugo K. Dooner, Piscataway, N.J.; Neal Courtney-Gutterson, Oakland; Janis Keller, Fremont, both of Calif.; Charanjit S. Nijjar, Surrey, Canada, and Edward J. Ralston, Pleasant Hill, Calif., assignors to DNA Plant Technology Corporation, Oakland, Calif.

PCT No. PCT/US94/04173, § 371 Date Feb. 16, 1996, § 102(e) Date Feb. 16, 1996, PCT Pub. No. WO94/23561, PCT Pub. Date Oct. 27, 1994

Continuation-in-part of application No. 08/049,282, Apr. 16, 1993, Pat. No. 5,534,660. This PCT application Apr. 15, 1994, Appl. No. 537,715.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] A01H *1/04;5/02;* **C12N** *15/10;15/63*

U.S. Cl. 800—205 **21 Claims**

1. An isolated nucleic acid construct comprising a polynucleotide sequence that hybridizes under stringent conditions to a Ph6 nucleic acid having the sequence of SEQ ID NO:1.

5,910,628

CAP-INDEPENDENT TRANSLATION SEQUENCES DERIVED FROM BARLEY YELLOW DWARF VIRUS

W. Allen Miller, Ames, Iowa, and Shanping Wang, Charlestown, Mass., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Provisional application No. 60/017,199, May 20, 1996. This application May 20, 1997, Appl. No. 858,623.

Int. Cl.[6] A01H *1/04*

U.S. Cl. 800—205 **15 Claims**

1. A method of producing a protein translated from an uncapped eukaryotic messenger ribonucleic acid (mRNA) in a eukaryotic cell, comprising the steps of:

selecting an RNA with a nucleotide sequence encoding a protein to be expressed;

joining nucleotides 1–168 of the barley yellow dwarf virus RNA, PAV serotype, to the 5' untranslated region of said uncapped mRNA, said nucleotides 1–168 comprising the 5' untranslated region plus first 27 nucleotides of the open reading frame of the barley yellow dwarf virus RNA;

linking nucleotides 4513–5677 of the barley yellow dwarf virus RNA, PAV serotype, to the 3' untranslated region of said uncapped mRNA; and

introducing said uncapped mRNA into said eukaryotic cell.

5,910,629

CHIMERIC GENES COMPRISING A FUNGUS-RESPONSIVE ELEMENT

Günter Strittmatter, Cologne, Germany, assignor to Max-Planck-Gesellschaft Zur Forderung der Wissenschaften E.V., Munich, Germany

PCT No. PCT/EP95/00868, § 371 Date Jan. 6, 1997, § 102(e) Date Jan. 6, 1997, PCT Pub. No. WO96/28561, PCT Pub. Date Sep. 19, 1996

PCT Filed Mar. 9, 1995, Appl. No. 737,298

Int. Cl.[6] A01H *5/00;* **C12N** *15/29;15/82;5/04*

U.S. Cl. 800—279 **27 Claims**

1. A fungus-responsive prp1-1 element, consisting of a portion of the DNA sequence of SEQ ID No. 1, which when operably linked to a CaMV 35S TATA-box region, a beta-glucuronidase coding region and a polyadenylation signal of the pea rbsS-3C gene and stably inserted into the nuclear genome of cells of a plant, results in a beta-glucuronidase expression in roots of said plant which is lower than histochemically detectable beta-glucuronidase expression in roots of a control plant obtained by a fungus-responsive prp1-1 element consisting of the DNA sequence of SEQ ID No.1 operably linked with said CaMV 35S TATA-box region, said beta-glucuronidase coding region and said polyadenylation signal of the pea rbsS-3C gene and stably inserted into the nuclear genome of cells of said control plant.

8. A fungus-responsive promoter comprising the fungus-responsive prp1- 1 elements of any one of claims **1** to **7**, provided that said fungus-responsive element is not the DNA sequence of SEQ ID No.1.

11. A fungus-responsive chimeric gene, comprising the following operably linked elements:

a) the fungus-responsive promoter of claim **8**;

b) a first foreign DNA that encodes a first RNA or protein or polypeptide which, when produced or overproduced in cells of a plant which immediately surround a fungus-infection site, kills or at least disturbs the metabolism, functioning or development of said plant cells, immediately surrounding said fungus-infection site; and

c) suitable 3' transcription termination signals for expressing said foreign DNA in said plant cells which immediately surround said fungus infection site.

20. A process for rendering a plant resistant to fungi comprising the step of transforming the plant's nuclear genome with a chimeric gene of claim **11**.

5,910,630

PLANT LYSOPHOSPHATIDIC ACID ACYLTRANSFERASES

Huw Maelor Davies, 307 Grande Ave.; Deborah Hawkins, 230 Grande Ave.; Janet Nelsen, 1019 Chestnut La., and Michael Lassner, 721 Falcon, all of Davis, Calif. 95616

Continuation-in-part of application No. 08/254,404, Jun. 6, 1994, application No. 08/231,196, Apr. 21, 1994, and application No. 08/224,625, Apr. 6, 1994, Pat. No. 5,563,058. This application Oct. 21, 1994, Appl. No. 327,451.

This patent is subject to a terminal disclaimer.

Int. Cl.[6] A01H *5/00;* **C12N** *15/82*

U.S. Cl. 800—295 ***26 Claims***

1. A DNA construct comprising a first DNA sequence encoding a plant 1-acylglycerol-3-phosphate acyltransferase peptide joined to a second DNA sequence heterologous to said first DNA sequence, wherein said first DNA sequence is obtainable by:

(A) an amplification reaction comprising the steps of:

(i) contacting, under polymerase chain reaction conditions, (a) oligonucleotide forward and reverse primers, wherein said forward primer comprises encoding sequence for six contiguous amino acids of a plant 1-acylglycerol-3-phosphate acyltransferase peptide selected from the group consisting of FPEGTRS (SEQ ID NO:24) and GRLLPFKKGF (SEQ ID NO:25), and wherein said reverse primer is complementary to encoding sequence for six contiguous amino acids of a plant 1-acylglycerol-3-phosphate acyltransferase peptide selected from the group consisting of LTGTHLAWRK (SEQ ID NO:26) and PITVKY (SEQ ID NO:27) and (b) DNA from a plant 1-acylglycerol-3-phosphate acyltransferase source;

(ii) recovering a DNA sequence which encodes a plant 1-acylglycerol-3-phosphate acyltransferase peptide; or

(B) (i) screening a plant gene library prepared from a plant 1-acylglycerol-3-phosphate acyltransferase source with a nucleic acid probe encoding at least 5 consecutive amino acids of a plant 1-acylglycerol-3-phosphate acyltranferase peptide selected from the group consisting of FPEGTRS (SEQ ID NO:24), GRLLPFKKGF (SEQ ID NO:25), LTGTHLAWRK (SEQ ID NO:26), and PITVKY (SEQ ID NO:27), and

(ii) confirming the identity of recovered clones as encoding 1-acylglycerol-3-phosphate acyltranferase by probing with a second nucleic acid probe encoding at least 5 consecutive amino acids of a plant 1-acylglycerol-3-phosphate acyltranferase peptide selected from the group consisting of FPEGTRS (SEQ ID NO:24) GRLLPFKKGF (SEQ ID NO:25), LTGTHLAWRK (SEQ ID NO:26), and PITVKY (SEQ ID NO:27).

2. A DNA sequence encoding an active plant 1-acylglycerol-3-phosphate acyltransferase, wherein said DNA sequence is obtained by screening a plant gene library from a plant 1-acylglycerol-3-phosphate acyltransferase source with said DNA sequence encoding a plant 1-acylglycerol-3-phosphate acyltransferase peptide recovered as in claim **1** (A), or wherein said DNA sequence is obtained as in claim **1** (B).

6. A chimeric gene comprising DNA sequences in the 5' to 3' direction of transcription, transcriptional and translational regulatory initiation regions functional in a host cell, a DNA sequence encoding a plant 1-acylglycerol-3-phosphate acyltransferase of claim **2**, and a transcription termination regulatory region functional in said cell, wherein at least one of said regulatory regions is heterologous to said DNA sequence or at least one of said DNA sequences is heterologous to said cell.

7. The chimeric gene of claim **6** wherein said host cell is a plant cell.

12. A plant cell comprising a construct according to claim **7**.

5,910,631

MIDDLE CHAIN-SPECIFIC THIOESTERASE GENES FROM *CUPHEA LANCEOLATA*

Reinhard Topfer, Bergheim; Norbert Martini, and Jozef Schell, both of Cologne, all of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V., Munich, Germany

PCT No. PCT/EP94/02935, § 371 Date Sep. 23, 1996, § 102(e) Date Sep. 23, 1996, PCT Pub. No. WO95/06740, PCT Pub. Date Mar. 9, 1995

PCT Filed Sep. 2, 1994, Appl. No. 605,106

Claims priority, application Germany, Sep. 3, 1993, 43 29 828

Int. Cl.[6] A01H *5/00;* **C12N** *5/14;15/29;15/52;15/82*

U.S. Cl. 800—298 **18 Claims**

1. *An isolated nucleic acid that encodes the amino acid sequence encoded by the genomic DNA sequence of SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:4, or SEQ ID NO:7.*

4. An isolated nucleic acid that encodes the amino acid sequence encoded by the cDNA sequence of SEQ ID NO:1, SEQ ID NO:2, or SEQ ID NO:3.

10. A method of producing a transformed plant cell which comprises fatty acids of middle chain length, said method comprising the step of transferring by means of gene technology the isolated nucleic acid of claims 1 or claim 4 into a cell of a plant to form a transformed plant cell, wherein said isolated nucleic acid is expressed to yield said fatty acids.

5,910,632

DNA ENCODING A PECTIN ESTERASE, CELLS AND PLANTS DERIVED THEREFROM

Colin Roger Bird, Bracknell; Brett Eric Burridge, Kegworth; Gregory Alan Tucker, Shepshed, all of United Kingdom, and Jianliang Zhang, Gainesville, Fla., assignors to Zeneca Limited, London, United Kingdom

PCT No. PCT/GB95/00367, § 371 Date Dec. 10, 1996, § 102(e) Date Dec. 10, 1996, PCT Pub. No. WO95/23227, PCT Pub. Date Aug. 31, 1995

PCT Filed Feb. 22, 1995, Appl. No. 693,243

Claims priority, application United Kingdom, Feb. 23, 1994, 9403406

Int. Cl.[6] **C12N** *5/10;15/63;* **C07H** *21/04*

U.S. Cl. 800—298 **9 Claims**

1. A DNA construct comprising a DNA sequence encoding a tomato pectin esterase isoenzyme selected from the group consisting of pectin esterase isoenzyme 3 and pectin esterase isoenzyme 1A.

5,910,633

SOYBEAN VARIETY 93B25

Leon George Streit, Des Moines, and Robert Eugene Freestone, Cedar Falls, both of Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 13, 1998, Appl. No. 23,691

Int. Cl.[6] **A01H** *5/00;5/10;1/02;* **C12N** *5/04*

U.S. Cl. 800—312 **21 Claims**

1. A soybean seed designated 93B25, representative seed of said soybean variety 93B25 having been deposited under ATCC Accession No. 203373.

5,910,634

SOYBEAN VARIETY 90B72

John Franklin Soper, Urbandale, Iowa, and Michael Thomas Roach, Redwood Falls, Minn., assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jun. 30, 1998, Appl. No. 107,951

Int. Cl.[6] **A01H** *5/00;5/10;1/02;* **C12N** *5/04*

U.S. Cl. 800—312 **21 Claims**

1. A soybean seed designated 90B72, representative seed of said soybean variety 90B72 having been deposited under ATCC Accession No. 203593.

5,910,635

INBRED CORN PLANT 91DFA-5

Marvin L. Boerboom, Olivia, Minn., assignor to Dekalb Genetics Corporation, Dekalb, Ill.

Continuation-in-part of application No. 08/384,266, Feb. 3, 1995. This application Feb. 1, 1996, Appl. No. 595,550.

Int. Cl.[6] **A01H** *4/00;5/00;1/00;* **C12N** *5/04*

U.S. Cl. 800—320.1 **35 Claims**

1. Inbred corn seed of the inbred corn plant designated 91DFA-5, a sample of the seed of said inbred corn plant designated 91DFA-5 having been deposited under ATCC Accession No. 203453.

5,910,636

INBRED CORN LINE ASG20

Michael S. Hawbaker, Galena, Md., assignor to Asgrow Seed Company, Kalamazoo, Mich.

Filed Aug. 28, 1997, Appl. No. 919,150

Int. Cl.[6] **A01H** *5/00;5/10;1/04;* **C12N** *5/04*

U.S. Cl. 800—320.1 **15 Claims**

1. An inbred corn seed designated ASG20 having ATCC accession No. 203598.

5,910,637

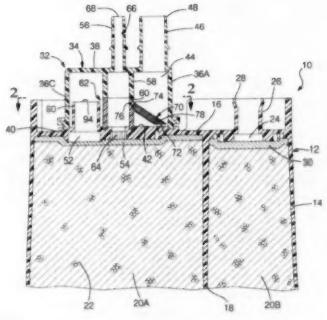
FUEL VAPOR STORAGE CANISTER

Thomas Charles Meiller, Pittsford; Timothy Michael Beadnell, Avon, and Charles Henry Covert, Manchester, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1997, Appl. No. 917,308

Int. Cl.[6] **B01D** *53/04*

U.S. Cl. 96—135 **6 Claims**



1. A fuel vapor storage canister comprising:

a canister body having a carbon bed chamber therein,

a liquid trap housing on said canister body having a polygonal internal chamber therein including a plurality of three sides which define said gravitational bottom of said polygonal internal chamber in respective ones of a plurality of three orientations of said fuel vapor storage canister and which converge at a corner of said polygonal internal chamber,

a vapor inlet port communicating with said polygonal internal chamber,

a tubular boss on said canister body in said polygonal internal chamber communicating with said carbon bed chamber having a lip vertically above a gravitational bottom of said polygonal internal chamber,

said tubular boss defining a serpentine flow path through said polygonal internal chamber from said vapor inlet port to said carbon bed chamber operative to separate and capture in said polygonal internal chamber up to the level of said lip on said tubular boss liquid fuel entrained with fuel vapor entering said polygonal internal chamber through said vapor inlet port,

a vapor purge duct traversing said polygonal internal chamber from said carbon bed chamber to a vapor purge port,

a metering orifice in said vapor purge duct vertically above said lip on said tubular boss relative to said gravitational bottom of said polygonal internal chamber, and

a pick-up tube having an inboard end around said metering orifice and an outboard end disposed substantially at said corner of said polygonal internal chamber defined at the convergence of said plurality or three sides so that when said purge duct is connected to a source of subatmospheric pressure a pressure gradient between said vapor purge duct and said polygonal internal chamber induces a flow of liquid fuel into said purge duct through said pick-up tube and said metering orifice so that substantially all liquid fuel is *extracted from said polygonal internal chamber through said* pick-up tube in each of said plurality of three orientations of said fuel vapor storage canister.

5,910,638

HIGH DENSITY TUNGSTEN-LOADED CASTABLE EXPLOSIVE

Arthur F. Spencer, and Gary H. Parsons, both of Niceville, Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 28, 1997, Appl. No. 969,936

Int. Cl.[6] C06B *45/06*

U.S. Cl. 149—18 **9 Claims**

1. A castable explosive composition consisting essentially of about 50 to 90 weight percent tungsten powder, about 3 to 40 weight percent of a high energy explosive, about 3 to 16 weight percent of an energetic binder, and about 2 to 10 weight percent aluminum powder.

5,910,639

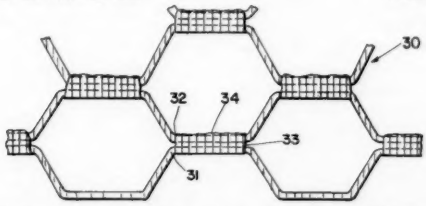
AIR VENT PANELS FOR ELECTROMAGNETIC SHIELDING

George M. Kunkel, 8402 McGroarty, Sunland, Calif. 91040

Filed Mar. 20, 1997, Appl. No. 999,781

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 MS **9 Claims**



1. In an air vent panel for passage of air and for shielding of electromagnetic fields comprising a honeycomb body made of a plurality of metal undulations, each having a central segment and two side segments that together form axially extending hexagonally shaped air passages when a plurality of undulations are laid against one another with their central segments in parallel adjacency to one another, said central segments being joined together by an adhesive bond, said body having a laterally cut end face which exposes cross-sections of said undulations and adhesive bonds, the improvement comprising:

a blended displacement of a portion of the exposed cross-section of the central segment of one of said undulations across said adhesive bond and upon said exposed cross-section of the central segment of the other said undulation thereby to form a conductive bridge between said two central segments, said bridge extending for substantially the full length of said central segments.

5,910,640

ELECTRICAL CONTACT ASSEMBLY FOR USE IN A MULTI-DIE ENCAPSULATION DEVICE

Warren M. Farnworth, Nampa; Alan G. Wood, and Tim J. Corbett, both of Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 08/353,769, Dec. 12, 1994, Pat. No. 5,767,443, which is a continuation-in-part of application No. 08/091,786, Jul. 10, 1993, abandoned. This application Feb. 20, 1998, Appl. No. 26,786.

This patent is subject to a terminal disclaimer

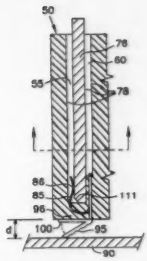
Int. Cl.[6] H01R *9/09*

U.S. Cl. 174—50 **7 Claims**

1. An electrical contact, comprising:

a) a retention portion configured to engage a first workpiece and to at least partially engage said first workpiece in a generally fixed position and to establish electrical communication with said workpiece; and

b) a compliant foot portion attached to said retention portion, said compliant foot portion capable of movement from a first position to a second position, wherein said retention portion and said complaint foot portion are electrically conductive and are in electrical communication one with the other.



5,910,641

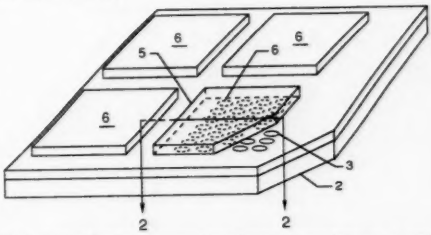
SELECTIVELY FILLED ADHESIVES FOR COMPLIANT, REWORKABLE, AND SOLDER-FREE FLIP CHIP INTERCONNECTION AND ENCAPSULATION

Michael A. Gaynes, Vestal, N.Y., and Jaynal A. Molla, Chandler, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of application No. 08/781,397, Jan. 10, 1997. This application Jul. 17, 1997, Appl. No. 895,537.

Int. Cl.[6] H01L *23/02*

U.S. Cl. 174—52.4 **9 Claims**



1. A device for interconnecting electronic modules to a wiring carrying substrate, comprising;

a. a flexible adhesive dielectric film having an upper surface to abut said module and a lower surface to abut said substrate and having a surface to surface thickness in the range of 1 to 2 mils;

b. said film having areas carrying dendritic metal particles oriented perpendicularly to the surfaces of said film; and wherein,

c. said areas correspond to conductive pads on said modules.

5,910,642

EXPANDABLE ENCLOSURE FOR TELECOMMUNICATIONS APPLICATIONS

Bassel H. Daoud, Parsippany, N.J., assignor to Lucent Technologies Inc., Murray Hill, Del.

Filed Aug. 29, 1997, Appl. No. 924,025

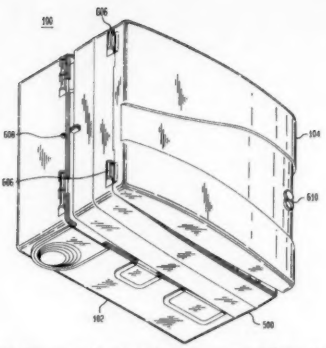
Int. Cl.[6] H01H *9/02*

U.S. Cl. 174—57 **14 Claims**

1. An expandable enclosure for telecommunications applications, comprising a base and a cover pivotally and removably mounted to the base, wherein:

the base and the cover define a first chamber adapted to receive a cable and telecommunications hardware for splicing or connecting to the cable;

the base and the cover are adapted to receive a mid layer mounted between the base and the cover, such that the volume of the enclosure is increased for receiving additional telecommunications hardware for splicing or connecting to the cable,



wherein the cover is adapted to be removed from the base and the mid layer is adapted to be mounted between the base and the cover without disturbing any existing electrical connections housed within the base;

the cover is adapted to be pivotally mounted directly to the base without requiring any additional mounting hardware;

the cover is adapted to be pivotally mounted directly to the mid layer without requiring any additional mounting hardware; and

the mid layer is adapted to be pivotally mounted directly to the base without requiring any additional mounting hardware.

5,910,643

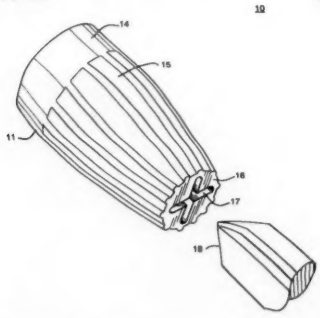
SCREW-ON ELECTRICAL WIRE CONNECTOR

Peter A. Laine, 35 Oliver Dr., and Robert A. Miskell, 9 Julie La., both of Hudson, N.H. 03051

Provisional application No. 60/038,867, Feb. 18, 1997. This application Dec. 23, 1997, Appl. No. 996,729.

Int. Cl.[6] **H01R** *4/22*

U.S. Cl. 174—87 **15 Claims**



1. A rotationally applied electrical connector for connecting electric wires, comprising a hollow cylindrical structure closed at one end to form a socket and an end cap, said socket configured with means for rotatively engaging a multiplicity of uninsulated conductor ends of said electric wires, said end cap comprising a receiving fitment recessed into its exterior surface, said fitment being axially aligned with said socket and configured to accept non-rotational engagement with a Phillips style screwdriver tip.

5,910,644

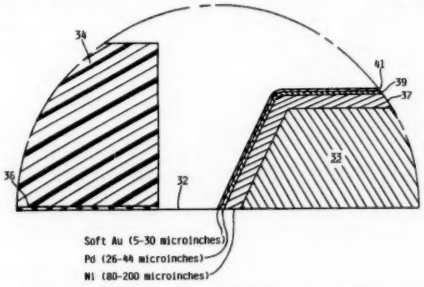
UNIVERSAL SURFACE FINISH FOR DCA, SMT AND PAD ON PAD INTERCONNECTIONS

Dale E. Goodman, Oronoco; Mark K. Hoffmeyer, Rochester, and Roger S. Krabbenhoft, Elgin, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1997, Appl. No. 873,060

Int. Cl.[6] **H05K** *1/16*

U.S. Cl. 174—260 **14 Claims**



1. A printed circuit device including an electrically insulating substrate on which are supported electrical conductors including multiple sets of termination pad sites for mounting and electrically connecting electronic elements to connect such printed circuit device to such electronic elements, said termination pad sites being processed using a single plating sequence to provide common plated layers comprising

masking means overlying and electrically insulating said conductors and exposing said termination pad sites;

a first plated layer of electrically conductive metal on said exposed termination pad sites that functions to prevent diffusion of the material of said termination pad sites therethrough;

a second plated layer, overlying said first plated layer, of hard, wear resistant noble or semi-noble metal that provides connector reliability and affords metallurgically stable solder joint and wirebond interfaces in the presence of intermetallic compounds;

a third plated layer, overlying said second plated layer, of soft gold which is readily wettable by solder, supports wirebond connections and presents a clean noble metal surface that prevents mechanical interconnect surface degradation; and

electronic elements attached to said multiple sets of termination pad sites using pad on pad, wear resistant mechanical connection and at least one other attachment technique selected from the group consisting of wirebonding, direct chip attach (DCA) wire wedge bonding, and surface mount technology (SMT) or pin in hole (PIH) soldering.

5,910,645

METHOD AND APPARATUS FOR MAKING LOAD CELLS LESS SENSITIVE TO OFF-CENTER LOAD APPLICATIONS

Hans-Joachim Gerlach, Hoechst-Hassenroth; Heinz Ronald Will, Alsbach-Haehnlein; Ralf Waegner, Trebur, and Werner Schlachter, Darmstadt, all of Germany, assignors to Hottinger Baldwin Messtechnik GmbH, Darmstadt, Germany

Continuation-in-part of application No. 08/433,617, May 3, 1995, Pat. No. 5,679,822. This application Jul. 16, 1997, Appl. No. 895,217.

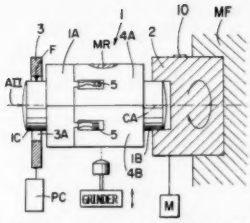
Claims priority, application Germany, May 11, 1994, 44 16 442

This patent is subject to a terminal disclaimer

Int. Cl.[6] **G01G** *13/14*

U.S. Cl. 177—1 **22 Claims**

1. A method for making a load cell having a sensor body with a symmetry axis, less sensitive to off-center load applications, comprising the following steps:



(a) securing at least one pick-up element to said sensor body and holding the sensor body by at least one mounting,

(b) applying a first load in a first direction relative to said symmetry axis to said sensor body to produce a first output signal,

(c) measuring said first output signal and correlating said first output signal to said first load,

(d) applying at least one second load of different size compared to said first load to said sensor body in a second direction different from said first load application direction,

(e) measuring a second output signal and correlating said second output signal to said second load,

(f) ascertaining from said first and second output signals whether an off-center load sensitivity of said load measuring load cell is within a permissible tolerance range, and if necessary as a result of said ascertaining

(g) performing at least one of a mechanical tuning and an electrical tuning of said load measuring load cell.

5,910,646

QUANTITATIVE CHARGING APPARATUS

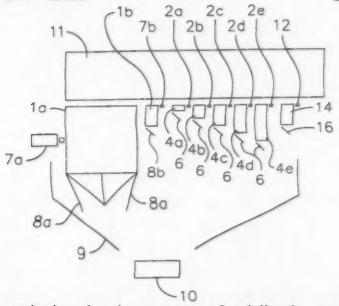
Shozo Kawanishi, Hyogo, Japan, assignor to Yamato Scale Co., Ltd., Hyogo, Japan

Filed Apr. 5, 1996, Appl. No. 628,491

Claims priority, application Japan, Apr. 6, 1995, 7-081034; May 19, 1995, 7-121302

Int. Cl.[6] G01G *13/00*

U.S. Cl. 177—25.18 **12 Claims**



1. A quantitative charging apparatus for delivering quantities of articles with each quantity being of an acceptable weight relative to a target weight W_o, said apparatus comprising:

a large charge storage cup provided with weighing means for storing articles having a weight which is smaller than and close to said target weight,

a plurality of additive storage cups provided with weighing means, said additive storage cups having at least two different capacities for storing articles for additive charging so as to make up an underweight obtained by subtracting the weight of the articles within said large charge storage cup from said target weight,

a control device for selecting a combination of said additive storage cups to stepwise change the weight of said articles for additive charging according to a predetermined charge weight difference, and

one or a plurality of additive auxiliary cups provided with weighing means for correcting a gap in said charge weight difference caused by a variation in bulk density of said articles when the combination of said additive storage cups is selected by said control device,

said large charge storage cup comprising a main charging storage cup and a subtractive auxiliary cup having respective weighing means, said subtractive auxiliary cup holding articles without discharge so that said charge weight difference is decreased.

5,910,647

ELECTRONIC WEIGHING APPARATUS UTILIZING SURFACE ACOUSTIC WAVES

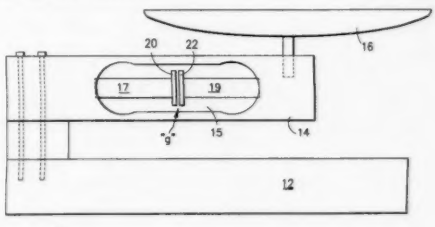
Vyacheslav D. Kats, Brooklyn, and Arnold S. Gordon, Woodmere, both of N.Y., assignors to Circuits and Systems, Inc., East Rockaway, N.Y.

Continuation-in-part of application No. 08/489,365, Jun. 12, 1995, Pat. No. 5,663,531. This application Oct. 7, 1996, Appl. No. 729,752.

This patent is subject to a terminal disclaimer

Int. Cl.[6] G01G *3/14*

U.S. Cl. 177—210 FP **21 Claims**



1. An electronic weighing apparatus, comprising:

a) a displaceable elastic member means for receiving a load and being displaced by the load such that the displacement of said elastic member means is related to the weight of the load, said elastic member having a hollowed central portion;

b) a first piezoelectric transducer having a first substrate and a first surface acoustic wave (SAW) transmitter, said first piezoelectric transducer being coupled to said elastic member within said hollowed central portion;

c) a second piezoelectric transducer having a second substrate and a first SAW receiver, said second piezoelectric transducer being mounted in close proximity to said first piezoelectric transducer such that said displacement of said elastic member causes a corresponding displacement of one of said first and second piezoelectric transducers relative to each other;

d) a first amplifier having an input and an output, said input of said first amplifier being coupled to said first SAW receiver and said output of said first amplifier being coupled to said first SAW transmitter such that said first piezoelectric transducer, said first amplifier, and said second piezoelectric transducer form a first oscillator having a first output frequency; and

e) processor means coupled to said output of said first amplifier, wherein

displacement of said elastic member means causes a displacement of one of said first and second piezoelectric transducers relative to each other and thereby changes said first output frequency, and said first output frequency is used by said processor means to determine an indication of the weight of the load.

5,910,648

SOUND GENERATOR

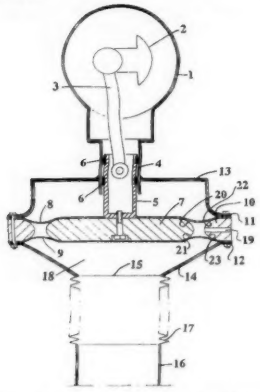
Mats Moritz, Trelleborg, Sweden, assignor to Kockum Sonics AB, Malmo, Sweden

Filed Mar. 9, 1998, Appl. No. 37,042

Claims priority, application Sweden, Mar. 13, 1997, 9700895

Int. Cl.[6] G10K *11/00*

U.S. Cl. 181—175 **3 Claims**



1. In a sound generator comprising a resonance tube and a device comprising a motor activating an oscillating piston for supplying gas pulses to the resonance tube via a connecting rod, in which said gas pulses form a standing sound wave and the piston is mounted within a chamber connected to the resonance tube, the improvement comprising in combination:

a membrane piston having two axially spaced membranes fastened to said wall of the chamber, and

an evacuating channel located between the two membranes for establishing a vacuum between the two membranes.

5,910,649

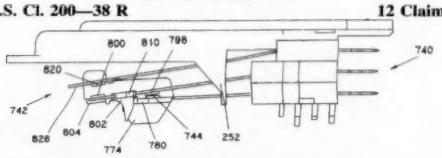
METHOD AND APPARATUS FOR CONTROLLING AN APPLIANCE HAVING A SWITCH BLADE WHICH INCLUDES STAGGERED ELECTRICAL CONTACTS

Daniel Keith Amonett, and Henry Earl Burgin, both of Marion County, Ind., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation of application No. 08/654,160, May 28, 1996, Pat. No. 5,750,948. This application Apr. 17, 1998, Appl. No. 62,237.

Int. Cl.[6] H01H *43/10*

U.S. Cl. 200—38 R **12 Claims**



1. A timer for controlling an appliance, comprising:

a camstack having a program blade defined therein;

an upper circuit blade having an upper contact secured thereto;

a lower circuit blade having a lower contact secured thereto;

an intermediate circuit blade having a length (L) and a first intermediate contact and a second intermediate contact secured thereto, said first intermediate contact and said second intermediate contact being staggered along the length of said intermediate circuit blade; and

a cam follower made of non-conductive material and being spaced apart from said first intermediate contact and said second intermediate contact, said cam follower being interposed between said intermediate circuit blade and said camstack, wherein (i) when said cam follower interacts with a first portion of said program blade of said camstack, relative movement is caused to occur between said intermediate circuit blade and said upper circuit blade so that said first intermediate contact and said upper contact are brought into physical contact with each other, and (ii) when said cam follower interacts with a second portion of said program blade of said camstack, relative movement is caused to occur between said intermediate circuit blade and said lower circuit blade so that said second intermediate contact and said lower contact are brought into physical contact with each other.

5,910,650

MANUAL CHARGING MECHANISM FOR INDUSTRIAL-*RATED CIRCUIT BREAKER*

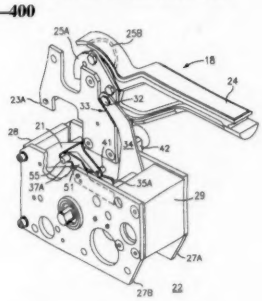
Roger N. Castonguay, Terryville, and James I. Smith, Avon, both of Conn., assignors to General Electric Company, Schenectady, N.Y.

Filed May 27, 1997, Appl. No. 863,667

This patent is subject to a terminal disclaimer

Int. Cl.[6] H01H *5/00; 1/52*

U.S. Cl. 200—400 **12 Claims**



1. A ratcheting mechanism for circuit breaker contact closing springs comprising:

a circuit breaker operating handle pivotally mounted intermediate a pair of opposing side frames;

a pivot plate attached to said operating handle and arranged for pivotal rotation in unison with said operating handle;

a charging shaft supported intermediate said side frames and arranged for interacting with a circuit breaker closing spring;

a charging crank having one end attached to said pivot plate and an opposite end engaging said charging shaft;

a holding pawl intermediate said side frames controlled by a locking latch and interacting with a charging gear on said charging shaft to prevent said charging shaft from rotating in a reverse direction wherein said charging gear includes circumferential teeth formed thereon and wherein said holding pawl includes a tine, said tine being retained by said circumferential teeth when said operating handle rotates said charging shaft and wherein said charging crank includes a charging link;

a cam connecting with said charging link, and arranged for rotation in unison with said charging link; and

a latch release lever intermediate said side frames, said release lever having a cam pin at one end thereof for interacting with said cam and a latch release tab at an opposite end for interacting with said locking latch.

5,910,651

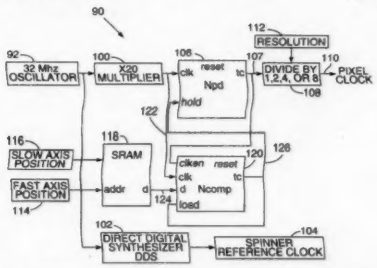
METHOD AND APPARATUS FOR IMAGE NONLINEARITY COMPENSATION IN SCANNING SYSTEMS

Mark Ryvkin, South Windsor, Conn., assignor to Gerber Systems Corporation, South Windsor, Conn.

Filed Jul. 15, 1997, Appl. No. 892,821

Int. Cl.[6] **G06K** *7/10*

U.S. Cl. 235—462.25 **24 Claims**



1. An apparatus for providing compensation for inaccuracies in a scanning optical system that has a platen for receiving a substrate having a surface and a raster scanning means responsive to control signals, having a mirror for advancing relative to said substrate an optical beam across said substrate surface in a first direction forming a scan line that includes a linear array of pixels formed by optically modulating the optical beam, said apparatus comprising:

a signal generator means for generating a master clock signal;

a pixel clock signal generator for receiving said master clock signal and for providing a pixel clock signal in response to pixel control signals for governing the separation between adjacent pixels in said scan line;

a mirror clock signal generator for receiving said master clock signal independently of said pixel clock signal generator, and for providing a mirror clock signal in response to mirror control signals for governing the rotational speed of the mirror, thereby determining the advancement of said optical beam in said first direction;

a memory means for storing error compensation signals indicative of compensation needed to remove deviations of the separation between adjacent pixels in said scan line from preferred values thereof; and

a controller for generating said pixel and mirror control signals in dependence on said error compensation signals such that the phase of said pixel clock signal is adjusted relative to the phase of said mirror clock signal, thereby removing said deviations for a segment of said scan line.

5,910,652

PORTABLE TERMINAL APPARATUS FOR AN IC CARD FOR SUPPLYING A POWER SOURCE VOLTAGE IN A PREDETERMINED TIMING

Ryouichi Kuriyama, Zushi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 29, 1997, Appl. No. 791,783

Claims priority, application Japan, Jan. 31, 1996, 8-016034

Int. Cl.[6] **G06K** *19/06*

U.S. Cl. 235—492 **5 Claims**

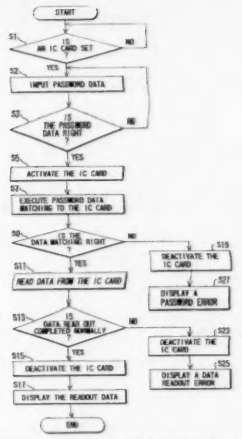
1. A portable terminal apparatus for an IC card, the portable terminal apparatus comprising:

an IC card insertion section;

an inputting section for inputting key data;

means for supplying a power source voltage to an IC card inserted in the IC card insertion section, only after the key data is input by the inputting section;

matching means for transmitting a key matching command with the key input data to the IC card to have key matching executed in the IC card;



processing means for reading data from and writing data to the IC card, when the key matching is carried out without errors;

means for stopping the power source voltage to the IC card, when the key matching is not completed successfully or when the processing means completes processing data with the IC card; and

means for displaying the data read from the IC card by the processing means, after the stopping means stops supplying the power source voltage to the IC card.

5,910,653

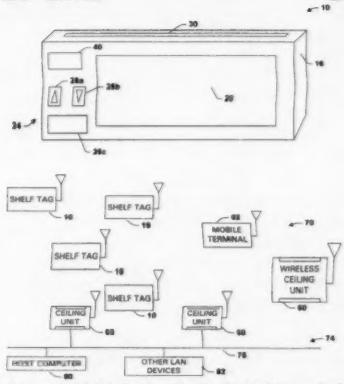
SHELF TAG WITH AMBIENT LIGHT DETECTOR

James A. Campo, Brunswick, Ohio, assignor to Telxon Corporation, Akron, Ohio

Filed Apr. 9, 1997, Appl. No. 826,909

Int. Cl.[6] **H01J** *40/14*; **G09G** *3/36*

U.S. Cl. 250—214 AL **29 Claims**



1. An electronic shelf display device including an independent power source, the electronic shelf display comprising:

a housing;

a processor disposed in the housing;

a display device supported by the housing and coupled to the processor, the display device being capable of displaying information;

an optical device coupled to the processor for at least receiving optical communications; and

ambient light detector circuitry coupled to the processor, the ambient light detector circuitry being operative for regulating

the power state of the electronic shelf display device based on ambient lighting conditions determined by the ambient light detector circuitry.

5,910,654

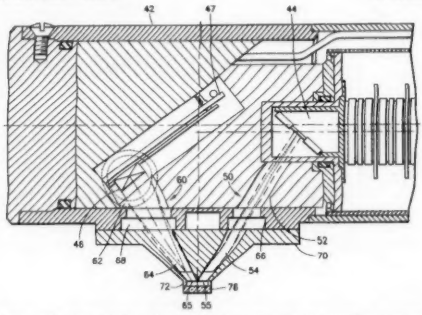
APPARATUS AND METHOD FOR MEASURING FORMATION DENSITY IN RUGOSE BOREHOLES

Arthur J. Becker, and Peter D. Wraight, both of Ridgefield, Conn., assignors to Schlumberger Technology Corporation, Ridgefield, Conn.

Filed Aug. 20, 1996, Appl. No. 700,202

Int. Cl.[6] G01V *5/12*

U.S. Cl. 250—269.3 **11 Claims**



1. A method for determining the density of a formation traversed by a borehole having irregularities along the borehole wall, comprising the steps of:

lowering into the borehole a sonde having a resilient member mounted thereon, the member being equipped with a back-scatter detection device having a photon source, a detector, and a substantially small contact head;

urging the member towards the borehole wall facing the contact head so as to establish intimate contact with the formation despite the presence of irregularities along said borehole wall;

positioning the contact head on the borehole wall;

irradiating the formation with photons from the source;

detecting photons scattered by the formation using the detector;

generating count rate signals responsive to the photons detected by the detector; and,

processing the count rate signals to derive the density of the formation.

5,910,655

REDUCING INTERFERENCES IN ELEMENTAL MASS SPECTROMETERS

John Skilling, Cambridge, United Kingdom, assignor to Max-Ent Solutions Ltd., Cambridge, United Kingdom

PCT No. PCT/GB97/00016, § 371 Date Sep. 4, 1997, § 102(e) Date Sep. 4, 1997, PCT Pub. No. WO97/25736, PCT Pub. Date Jul. 17, 1997

PCT Filed Jan. 3, 1997, Appl. No. 913,012

Claims priority, application United Kingdom, Jan. 5, 1996, 9600198

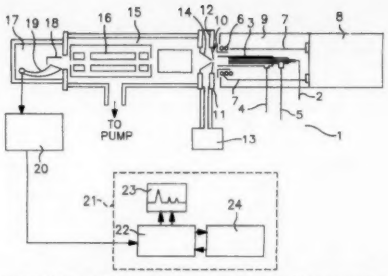
Int. Cl.[6] H01J *49/00;* **B01D** *59/44*

U.S. Cl. 250—281 **20 Claims**

14. A mass spectrometer for determining the elemental composition of a sample by mass spectrometry, the instrumental responsivity of the mass spectrometer being known, the mass spectrometer comprising:

means for ionising the sample to be analysed so as to produce ions characteristic of the elements present therein;

means for mass analysing and detecting the said ions so as to obtain an experimental spectrum consisting of data counts observed at different values of mass-to-charge ratio



characterised in that the mass spectrometer further comprises:

a. first generating means for generating a list of possible constituents of the sample, each said constituent having a known *isotope ratio pattern;*

b. assigning means for assigning a prior probability distribution to the said list of possible constituents;

c. defining means for defining a set of trial compositions corresponding to the results of the generating means and the assigning means;

d. means for using the isotope ratio patterns together with the said instrumental responsivity to define a trial mass spectrum corresponding to each said trial composition;

e. means for defining a posterior probability distribution by using probability calculus to compare the said trial mass spectra and the said experimental mass spectrum;

f. second generating means for generating a number of trial sets of possible compositions of the sample with their associated likelihood, which said trial sets are consistent with the said posterior probability distribution; and

g. means for using the said trial sets and associated likelihoods to obtain mean values for the amount of each said constituent of the sample, together with corresponding associated uncertainties.

5,910,656

ADJUSTMENT OF THE SAMPLE SUPPORT IN TIME-OF-FLIGHT MASS SPECTROMETERS

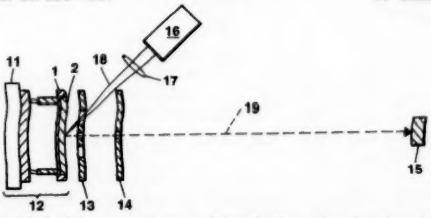
Claus Köster, Lilienthal; Armin Holle, Oyten, and Jochen Franzen, Bremen, all of Germany, assignors to Bruker Daltonik GmbH, Bremen, Germany

Filed Aug. 14, 1997, Appl. No. 911,150

Claims priority, application Germany, Aug. 20, 1996, 196 33 441

Int. Cl.[6] H01J *49/04*

U.S. Cl. 250—287 **18 Claims**



1. Method for accurate mass determination of analyte ions in a time-of-flight mass spectrometer using a calibrated mass scale, comprising the steps of

(a) placing an analyte substance and a reference substance on a surface of a sample support,

(b) introducing the sample support into the time-of-flight mass spectrometer,

(c) ionizing the reference substance, accelerating the reference substance ions and measuring the flight time of the reference substance ions,

(d) mechanically adjusting a distance d of the sample support from an acceleration electrode nearest to the sample support

in response to the measured flight time of the reference substance ions such that, following said adjusting, the flight time of ions of the reference substance is substantially equal to a predetermined calibrated flight time value for that reference substance,

(e) ionizing the analyte substance, accelerating the analyte ions and measuring the flight times of the analyte ions, and

(f) determining masses of the analyte ions using the calibrated mass scale.

5,910,657

ELECTRON BEAM EXPOSURE APPARATUS FOR SCANNING ELECTRON MICROSCOPY

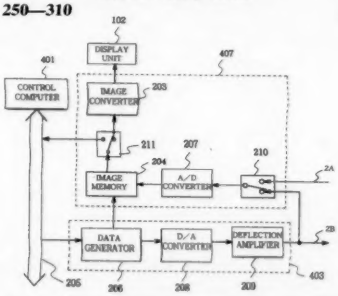
Toshiyuki Ihara, Nerima-ku, Japan, assignor to Adavantest Corporation, Tokyo, Japan

Filed May 15, 1997, Appl. No. 856,581

Claims priority, application Japan, May 15, 1996, 8-120443

Int. Cl.[6] H01J *37/26*

U.S. Cl. 250—310 **2 Claims**



1. An electron beam exposure apparatus for scanning electron microscopy, comprising:

a main control unit;

an electron gun for emitting an electron beam;

a deflection amplifier connected to said main control unit for outputting a drive signal for controlling deflection conditions of said electron beam;

a secondary electron detector;

an A/D converter selectively connected either said deflection amplifier or said secondary electron detector for generating a digital signal;

an image memory connected to said A/D converter and selectively to said main control unit such that said main control unit checks outputs of said deflection amplifier in response to outputs of said image memory; and

a first change-over switch connected between said electron detector and said A/D convertor.

5,910,658

METHOD AND SYSTEM FOR CHANGED PARTICLE BEAM EXPOSURE

Soichiro Arai; Kenichi Miyazawa; Hidefumi Yabara; Hiroshi Yasuda, all of Kawasaki, and Takayuki Nakatani, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, and Advantest Corporation, Tokyo, both of Japan

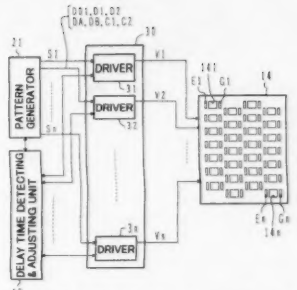
Filed Feb. 20, 1998, Appl. No. 27,470

Claims priority, application Japan, Apr. 11, 1997, 9-094199

Int. Cl.[6] H01J *37/302*

U.S. Cl. 250—492.22 **15 Claims**

1. A charged particle beam exposure method wherein a charged particle beam passes through apertures of a blanking aperture array mask to be converted into multiple beams, each of output potentials of a drive circuit is respectively provided to each of deflecting electrodes formed at edges of said apertures and a pattern corresponding to a pattern of said output potentials is projected onto an object, said method comprising the steps of:



preparing a variable delay circuit connected to an input side of said drive circuit;

detecting a first time point t**1** when a traveling wave of one of said output potentials from said drive circuit traverses a first reference potential;

detecting a second time point t**2** when a superimposed wave of said traveling wave and a reflected wave of said one of said output potentials traverses a second reference potential; and

adjusting a delay time of said variable delay circuit based on said first time point t**1** and said second time point t**2**.

5,910,659

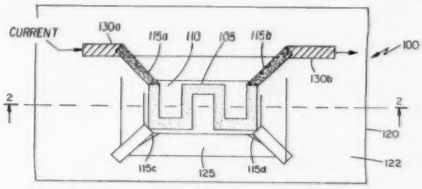
FLAT PANEL THERMAL INFRARED GENERATOR

Ralph Barry Johnson, Huntsville, Ala.; Michael Gaitan, North Potomac, Md., and Ronald C. L. Chung, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Apr. 30, 1996, Appl. No. 640,341

Int. Cl.[6] G01J *4/00*

U.S. Cl. 250—495.1 **23 Claims**



1. A thermal cell comprising:

an infrared source element for producing an infrared signal, having a primary emitting surface and an infrared generating cell;

a spatial decorrelator element disposed above and spaced apart from said infrared source element and having an aperture formed therein and through which said infrared signal radiates, for spatially decorrelating said infrared signal;

wherein said aperture extends between a first surface and a second surface of said decorrelator element and is defined by a side wall adapted to reflect said infrared signal, said aperture having a centerline substantially orthogonal to said primary emitting surface,

wherein said first surface and said second surface of said decorrelator element are substantially parallel with said primary emitting surface,

wherein said first surface is in a first plane and said aperture has a first area in said first plane, and

wherein said second surface is in a second plane and said aperture has a second area in said second plane, said second area being greater than said first area,

wherein the area of said primary emitting surface is defined by the first area in the first plane.

5,910,660

PROCESS AND DEVICE FOR DETERMINING THREE-DIMENSIONAL STRUCTURE IN THE SUBMICRON RANGE

Walter Hodel, Hunibach; Valerio Romano, Solothum, and Heinz Paul Weber, Kehrsatz, all of Switzerland, assignors to Heinz Paul Weber, Kehrsatz, Switzerland

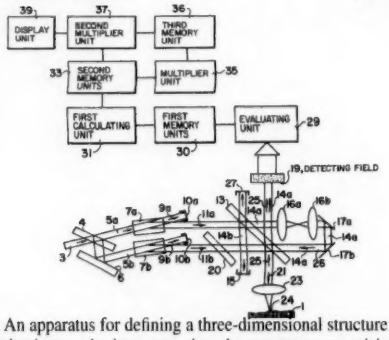
PCT No. PCT/CH96/00078, § 371 Date Sep. 17, 1997, § 102(e) Date Sep. 17, 1997, PCT Pub. No. WO96/29570, PCT Pub. Date Sep. 26, 1996

PCT Filed Mar. 6, 1996, Appl. No. 913,485

Claims priority, application Switzerland, Mar. 17, 1996, 765/95

Int. Cl.[6] G01B *11/24*

U.S. Cl. 250—559.22 **23 Claims**



19. An apparatus for defining a three-dimensional structure of an object having a submicrometer size, the apparatus comprising:

a spliter for splitting a coherent electromagnetic radiation beam into two partial beams including a first partial beam and a second partial beam;

a focusing lens for focusing the first partial beam on the object and for passing a first radiation reflected from the object toward a locus region;

a beam-directing system for directing a second partial beam to form a second radiation so as to create an electromagnetic combination of the first and second radiation at the locus region;

detectors for monitoring the locus region and for providing electrical signals responsive to electromagnetic parameters of the electromagnetic combination associated with the locus region;

a calculator for calculating second phase values from initial phase values of the electromagnetic combination, as represented by the electrical signals, via multiplication of the initial phase values by at least one predetermined value; and

an image generator for generating a magnified image representative of the object by using the second phase values, the electromagnetic parameters, and coordinates of the detectors relative to the locus region.

5,910,661

FLOURESCENCE SENSING DEVICE

Arthur E. Colvin, Jr., 12321 Middlebrook Rd., Germantown, Md. 20874

Filed May 13, 1997, Appl. No. 855,235

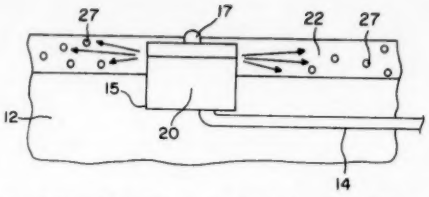
Int. Cl.[6] G01N *15/06*

U.S. Cl. 250—573 **11 Claims**

1. A fluorescence sensing device for determining the presence or concentration of an analyte in a liquid or gaseous medium comprises

(a) an optical filter having substantially flat, parallel top and bottom surfaces;

(b) a film of analyte-permeable fluorescent matrix on the top surface of the optical filter, said matrix containing fluorescent indicator molecules whose fluorescence is modulated by the presence of analyte in said film;



(c) a light-emitting P-N semiconductor junction which emits light at a wavelength that excites fluorescence in the indicator molecules; said light-emitting P-N junction being positioned on the top surface of the optical filter such that at least a portion of the light is emitted within the fluorescent matrix in directions substantially parallel to the top surface of the optical filter; and

(d) a photodetector on the bottom surface of the optical filter which generates an electrical signal responsive to fluorescent light emitted by said fluorescent indicator molecules;

wherein the optical filter has a relatively low absorbance for fluorescent light emitted by said fluorescent indicator molecules and a relatively high absorbance for light emitted by said light-emitting P-N junction.

5,910,662

SEMICONDUCTOR SUBSTRATE HAVING A SUPERCONDUCTING THIN FILM

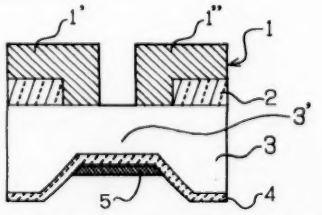
Hideo Itozaki; Keizo Harada; Naoji Fujimori; Shuji Yazu, and Tetsuji Jodai, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of application No. 07/939,050, Sep. 3, 1992, abandoned, which is a continuation of application No. 07/733,959, Jul. 22, 1991, abandoned, which is a continuation of application No. 07/290,309, Dec. 27, 1988, abandoned. This application Dec. 14, 1993, Appl. No. 167,437.

Claims priority, application Japan, Dec. 26, 1987, 62-331203; Dec. 26, 1987, 62-331204; Dec. 26, 1987, 62-331205; Dec. 26, 1987, 62-331207; Dec. 26, 1987, 62-331208; Dec. 26, 1987, 62-331209; Dec. 26, 1987, 62-331210; Dec. 26, 1987, 62-331211; Dec. 26, 1987, 62-331212; Dec. 26, 1987, 62-331213; Dec. 26, 1987, 62-331214; Dec. 26, 1987, 62-331215; Dec. 26, 1987, 62-331216; Dec. 26, 1997, 62-331206

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—33 **9 Claims**



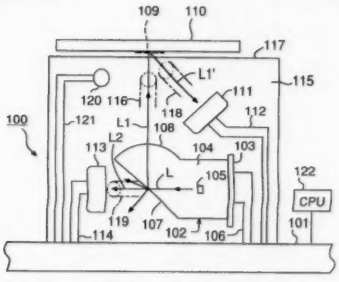
1. A semiconductor substrate-superconducting thin film composite comprising a single crystal semiconductor substrate, a superconducting thin film layer of compound oxide and an MgO buffer layer interposed between said semiconductor substrate and said superconducting layer, wherein said semiconductor substrate is made of a semiconductor selected from the group consisting of 3C—SiC, 6H—SiC, GaAs, GaP, InP, InSb, ZnSe, CdTe, HgCdTe, GaInAs, InAlAs and InGaAsP and said compound oxide is composed of at least one element selected from Group IIa of the Periodic Table, at least one element selected from Group IIIa of the Periodic Table, and copper.

5,910,663

OPTICAL SYSTEM AND LIGHT EMITTING DIODE HAVING A LIGHT DIVIDING SURFACE PORTION

Michio Naka, Kyoto, Japan, assignor to Kyoto Daiichi Kagaku Co., Ltd., Kyoto-fu, Japan

Filed Aug. 21, 1997, Appl. No. 916,174
Claims priority, application Japan, Aug. 23, 1996, 8-222194
Int. Cl.[6] H01L *27/15*
U.S. Cl. 257—81 **18 Claims**



1. A light emitting diode for use in an optical analyzer, comprising:

a body made of resin which is pervious to light; and

a light source having a semiconductor mounted in said body for emitting light, a portion of said light having a first intensity defining a primary light;

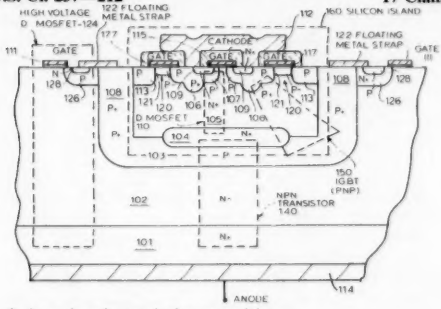
said body having a surface portion for dividing said primary light of said first intensity into a first light for an optical analysis and a second light for monitoring an intensity of said primary light.

5,910,664

EMITTER-SWITCHED TRANSISTOR STRUCTURES

Janardhanan S. Ajit, Sunnyvale, Calif., assignor to International Rectifier Corporation

Provisional application No. 60/030,210, Nov. 5, 1996. This application Nov. 5, 1997, Appl. No. 964,868.
Int. Cl.[6] H01L *23/58;29/74;29/76;29/94*
U.S. Cl. 257—212 **17 Claims**



1. A semiconductor device comprising:

a substrate of a first conductivity type having substantially flat parallel upper and lower surfaces;

a base region of a second conductivity type formed in an upper surface of said substrate;

an active region of said first conductivity type formed in said base region at said upper surface;

at least one first body region of said second conductivity type formed in said active region at said upper surface;

at least one first source region of said first conductivity type formed in said body region at said upper surface and forming a first channel region in said body region between said first source region and said active region;

at least one first gate electrode disposed atop said upper surface *and overlying and insulated from said first channel region and* operable to invert said first channel region in response to a suitable gate voltage supplied thereto;

at least one cathode electrode disposed atop said upper surface and contacting said first source region;

a second body region of said second conductivity type formed in said upper surface of said substrate and being located adjacent to said base region;

a second source region of said first conductivity type formed in said second body region at said upper surface and forming a second channel region in said second body region between said second source region and said substrate;

a second gate electrode disposed atop said upper surface and overlying and being insulated from said second channel region and being operable to invert said second channel region in response to said suitable gate voltage supplied thereto;

at least one first connecting electrode disposed atop said upper surface and overlying at least a portion of said second source region, said second body region and said base region, so that when said suitable gate voltage is applied to said second gate electrode, said base region is electrically coupled to said substrate; and

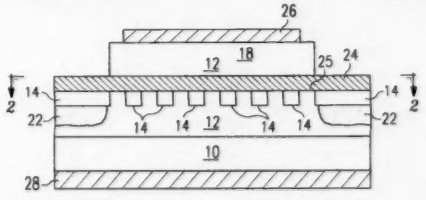
an anode contact formed on said lower surface of said substrate.

5,910,665

LOW CAPACITANCE POWER VFET METHOD AND DEVICE

Donald Lynn Plumton, Dallas, and Jau-Yuann Yang, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Provisional application No. 60/009,317, Dec. 29, 1995. This application Dec. 17, 1996, Appl. No. 768,357.
Int. Cl.[6] H01L *29/80;31/112;29/76;29/94*
U.S. Cl. 257—284 **19 Claims**



1. A microelectronic structure comprising:

a. a n-type layer over a substrate;

b. a p-type carbon doped gate grid structure in said n-type layer which form channels between a source and a drain portion of said n-type layer;

c. a gate contact to said gate structure;

d. a more electrically insulative region of said n-type layer which forms a gate isolation region in said n-type layer below said gate contact to said gate structure;

e. a source contact to said source; and

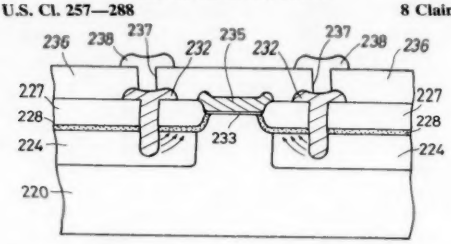
f. a drain contact to said drain.

5,910,666

HIGH-VOLTAGE METAL-OXIDE SEMICONDUCTOR (MOS) DEVICE

Jemmy Wen, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Taiwan

Division of application No. 08/749,794, Nov. 15, 1996, Pat. No. 5,696,009. This application Sep. 12, 1997, Appl. No. 928,627.
Claims priority, application Taiwan, Aug. 21, 1996, 85111563
Int. Cl.[6] H01L *29/76;29/80*
U.S. Cl. 257—288 8 Claims



1. A high-voltage MOS device based on a substrate having an active region defined thereon, the substrate being formed with an isolation layer surrounding the active region, said high-voltage MOS device comprising:

at least a gate layer formed over the active region,

a plurality of wells formed beneath the isolation layer;

a plurality of drift regions formed beneath the isolation layer and above the wells;

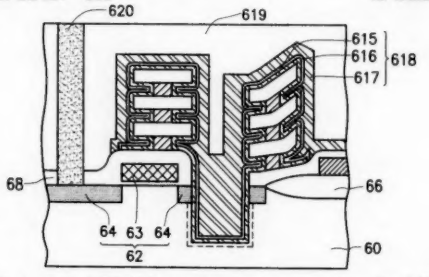
at least a pair of source/drain regions which penetrate through the isolation layer and the drift regions to the inside of the wells.

5,910,667

STRUCTURE FOR A STACKED DRAM CAPACITOR

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corp., Taiwan, China

Filed Jul. 9, 1997, Appl. No. 890,303
Claims priority, application Taiwan, Apr. 2, 1997, 86104246
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—306 11 Claims



1. A stacked DRAM capacitor structure on top of a MOS transistor having a gate region and a source/drain region, comprising:

(a) an annular insulating structure having a radial cross-sectional profile shaped as a plurality of vertically stacked T's, and a central opening exposed to the source/drain region of the MOS transistor;

(b) a lower electrode covering the exposed surfaces of the annular insulating structure and above the source/drain region; and

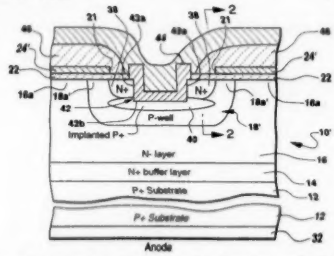
(c) an upper electrode separated from the lower electrode by an intermediate dielectric layer.

5,910,668

METHOD OF MAKING A INSULATED GATE BIPOLAR TRANSISTOR WITH HIGH-ENERGY P+ IMPLANT AND SILICON-ETCH CONTACT

Donald Ray Disney, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Division of application No. 08/526,427, Sep. 11, 1995, Pat. No. 5,843,796. This application Jun. 9, 1997, Appl. No. 909,436.
Int. Cl.[6] H01L *29/76;29/74*
U.S. Cl. 257—329 14 Claims



1. A semiconductor switching device having multiple PN junctions and an insulated gate control electrode surrounding a power electrode, said switching device comprising:

a monocrystalline semiconductor substrate portion of one conductivity type providing a base layer;

a first monocrystalline layer on said base layer, said layer being of an opposite conductivity type of said semiconductive material;

a second monocrystalline layer on said first layer, said second monocrystalline layer being of said opposite conductivity type semiconductive material and having a given thickness but also having a lesser conductivity than said first monocrystalline layer;

a first monocrystalline island-like region of said one conductivity type semiconductive material inset in an outer major face of said second monocrystalline layer, said first island-like region having an outer face and also having a thickness less than the thickness of said second monocrystalline layer, whereby said first island-like region has a bottom surface spaced from said first monocrystalline layer;

a second monocrystalline island-like region of said opposite conductivity type inset wholly within an outer major face of said first island-like region, whereby a circumscribing band of said first island-like region circumferentially surrounds said second island-like region, said second island-like region having an outer face and a thickness less than the thickness of said first island-like region, whereby said second island-like region has a bottom surface spaced from said bottom surface of said first island-like region;

a subsurface disk-like area of higher doping level in said first island-like region below said second island-like region, said disk-like area having its major faces oriented parallel said island faces and having an outer periphery generally registered with the outer periphery of said second island-like region such that the second island-like region and the disk-like area extend laterally across the first island-like region about the same distance and said subsurface disk-like area being spaced apart from a top surface of said first monocrystalline island-like region;

a central recess in said outer face of said second island-like region that extends through the thickness of the second island-like region into said subsurface disk-like area of said first island-like region;

an insulated gate control electrode on at least a circumferential portion of said circumscribing band of said first island-like region, said insulated gate electrode extending completely across said portion of said band;

a first power electrode in said recess, said electrode being in low electrical resistance contact with said area of higher doping in said first island-like region and also with said second island-like region; and

a second power electrode in low electrical resistance contact with said substrate base layer.

5,910,669

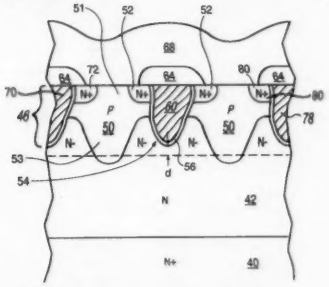
FIELD EFFECT TRENCH TRANSISTOR HAVING LIGHTLY DOPED EPITAXIAL REGION ON THE SURFACE PORTION THEREOF

Mike F. Chang, Cupertino; Fwu-Iuan Hshieh, San Jose; Sze-Hon Kwan, San Francisco, and King Owyang, Atherton, all of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Filed Jul. 24, 1992, Appl. No. 918,954

Int. Cl.[6] **H01L** *29/76;29/94;31/062;31/113*

U.S. Cl. 257—339 **7 Claims**



1. A field effect transistor comprising:

a substrate of a first conductivity type being a drain region;

a lower layer of the first conductivity type fortmed on the substrate and having a doping level less than that of the substrate;

an upper layer of the first conductivity type formed on the lower layer and having a doping level less than that of the lower layer;

a trench defined in only the upper layer and extending to within a predetermined distance of the lower layer, the trench being at least partially filled with a conductive gate electrode;

a source region of the first conductivity type formed in the upper layer and extending to a principal surface of the upper layer and lying adjacent to the sidewalls of the trench; and

a body region of a second conductivity type extending from the principal surface of the upper layer down to and into at least an upper portion of the lower layer and being spaced apart from the lower portion of the trench, wherein two spaced apart portions of the body region lying respectively on two sides of the trench define a lateral extent of the upper layer.

5,910,670

SEMICONDUCTOR DEVICE WITH IMPROVED BREAKDOWN VOLTAGE CHARACTERISTICS

Adrianus W. Ludikhuize, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

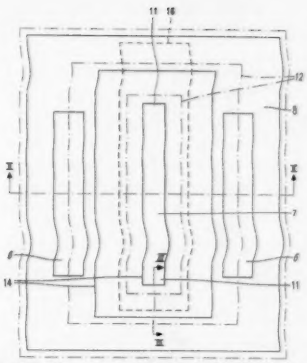
Filed Dec. 22, 1997, Appl. No. 995,467

Claims priority, application European Pat. Off., Dec. 23, 1996, 962036901

Int. Cl.[6] **H01L** *29/10;29/76*

U.S. Cl. 257—343 **5 Claims**

1. A semiconductor device with a semiconductor body comprising a layer-shaped region of a first conductivity type which adjoins a surface and which merges into a subjacent semiconductor region, called substrate hereinafter, of the opposite, second conductivity type via a pn junction, which semiconductor body is provided with a high-voltage transistor of the lateral DMOS type, comprising a source zone of the first conductivity type adjoining the surface, a base region of the second conductivity type surrounding the source zone in the semiconductor body and also adjoining the surface, and



a drain zone of the first conductivity type which adjoins the surface and which is situated at a distance from the base region and is separated therefrom by an interposed portion of the layer-shaped region, the source and drain zones of the transistor forming an interdigitated configuration with at least three elongate zones of the first conductivity type lying next to one another, of which the central zone forms a drain zone with at least an end face and of which the two outermost zones situated on either side of the central zone each form a source zone, characterized in that the base region is situated with its entire surface area in the layer-shaped region of the first conductivity type and is separated from the substrate by said layer-shaped region, and in that the outermost zones of the first conductivity type extend substantially parallel to the longitudinal direction of the central zone along the central zone and are interrupted at said end face of the central zone.

5,910,671

SEMICONDUCTOR DEVICE HAVING VARIOUS THRESHOLD VOLTAGES AND MANUFACTURING SAME

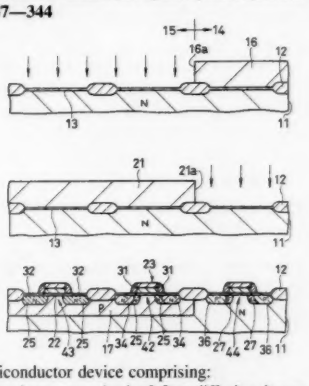
Hideaki Kuroda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of application No. 08/496,162, Jun. 28, 1995, abandoned, which is a division of application No. 08/296,038, Aug. 25, 1994, Pat. No. 5,580,805. This application Jul. 10, 1997, Appl. No. 889,741.

Claims priority, application Japan, Sep. 10, 1993, 5-250183; Feb. 25, 1994, 6-053033

Int. Cl.[6] **H01L** *29/76;29/94;31/062;31/119*

U.S. Cl. 257—344 **1 Claim**



1. A semiconductor device comprising:

a first transistor comprised of first diffusion layers which are exclusively comprised of a first conductivity type;

a second transistor comprised of second diffusion layers of said first conductivity type in contact with a channel portion of said second transistor and third diffusion layers of said first

conductivity type in contact with said second diffusion layers on a side opposing said channel portion of said second transistor;

a third transistor comprised of fourth diffusion layers of a second conductivity type in contact with a channel portion of said third transistor and fifth diffusion layers of said second conductivity type in contact with said fourth diffusion layers on a side opposing said channel portion of said third transistor;

wherein a concentration of said first diffusion layers is substantially the same as a concentration of said second diffusion layers and concentration of said third diffusion layers is higher than said first and second diffusion layers, and a concentration of said fifth diffusion layers is higher than said fourth diffusion layers; and

further wherein said first, second and third transistors each have a different first conductivity type impurity concentration on the surface of the channel portions of said first, second and third transistors.

5,910,672

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

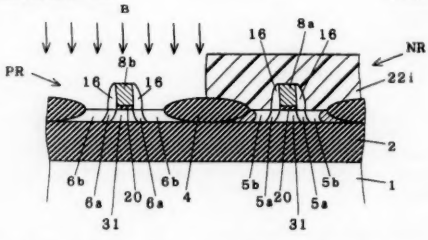
Toshiaki Iwamatsu, and Takashi Ipposhi, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1997, Appl. No. **888,898**

Claims priority, application Japan, Feb. 26, 1997, 9-042250

Int. Cl.[6] H01L 21/76

U.S. Cl. 257—347 **6 Claims**



1. A semiconductor device formed on a SOI substrate in which a buried oxide film and a SOI layer are stacked on a silicon substrate, said semiconductor device comprising:

a first semiconductor region of a first conductivity type formed in a predetermined position of said SOI layer, said first semiconductor region extending from a surface of said SOI layer to a surface of said buried oxide film;

a pair of second semiconductor regions of a second conductivity type selectively formed in said SOI layer so as to sandwich said first semiconductor region;

a gate oxide film formed in an upper portion of said first semiconductor region; and

a gate electrode formed on said gate oxide film,

wherein said first semiconductor region contains nitrogen introduced so as to have a predetermined concentration distribution in a depth direction thereof,

said predetermined concentration distribution having:

a first peak portion having a first concentration range, in the vicinity of an interface between said first semiconductor region and said buried oxide film; and

a second peak portion having a second concentration range, in the vicinity of an interface between said first semiconductor region and said gate oxide film.

5,910,673

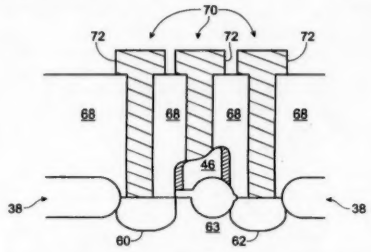
LOCOS MOS DEVICE FOR ESD PROTECTION

Sheng Teng Hsu, Camas, Wash.; Katsumasa Fujii; Hidechika Kawazoe, both of Nara, Japan, and Jong Jan Lee, Camas, Wash., assignors to Sharp Microelectronics Technology, Inc., Camas, Wash., and Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 4, 1997, Appl. No. 984,801

Int. Cl.[6] H01L *23/62*

U.S. Cl. 257—355 **11 Claims**



1. A LOCOS MOS device, having a large drain to gate breakdown voltage for ESD protection, selected from the group consisting of NMOS and PMOS transistors, the MOS device comprising:

a well of doped silicon;

source and drain regions of doped silicon formed in said doped silicon well;

a local area of oxidized silicon (LOCOS), having a first thickness, overlying said doped silicon well and forming a thick region of gate oxide adjoining said drain;

a thin oxide layer, having a second thickness, overlying said doped silicon well and forming a thin region of gate oxide adjoining said source; and

a doped gate electrode having a length partially overlying said thin gate oxide, and partially overlying said thick LOCOS gate oxide regions, whereby the transistor has a large drain to gate breakdown voltage and a short ESD event turn-on time.

5,910,674

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND METHOD OF FABRICATING THE SAME

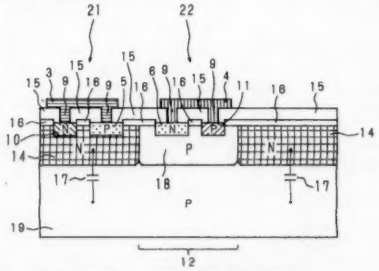
Yoshio Kasai, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/662,951, Jun. 13, 1996, abandoned, which is a continuation of application No. 08/455,165, May 31, 1995, abandoned. This application May 16, 1997, Appl. No. 857,467.

Claims priority, application Japan, Aug. 29, 1994, 6-204023

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—369 **2 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor substrate of a first conductivity type; and

a CMOS region formed in a main surface of said semiconductor substrate, said CMOS region containing:

a field effect transistor of said first conductivity type formed in a first region of a second conductivity type;

a field effect transistor of said second conductivity type formed in a second region of said first conductivity type; and

a semiconductor layer of said second conductivity type formed in a third region, the entire semiconductor layer of the second conductivity type extending from the main surface into said semiconductor substrate outside of said first and second regions abutting said second region.

5,910,675

SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME

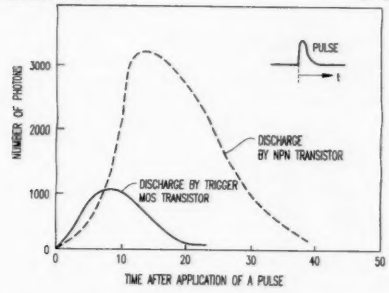
Yoko Horiguchi; Kaoru Narita, and Takeo Fujii, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 11, 1996, Appl. No. 763,513

Claims priority, application Japan, Dec. 14, 1995, 7-325911

Int. Cl.*[6] *H01L 29/72

U.S. Cl. 257—370 **17 Claims**



1. A semiconductor device having a semiconductor substrate having a terminal, and a protection circuit, said protection circuit comprising:

a field-effect transistor (FET) comprising at least one first diffusion layer of a first conductive-type formed on a region of said semiconductor substrate, said region being a second conductive-type region, said at least one diffusion layer being connected to said terminal, said FET further comprising at least one second diffusion layer of said first conductive-type connected to an electrode, said electrode having a constant electric potential and said FET having a first portion of said first diffusion layer as a drain, a first portion of said second diffusion layer as a source and a gate electrode connected to said electrode; and

a bipolar transistor in which a second portion of said first diffusion layer is a predetermined distance from a second portion of said second diffusion layer, wherein said source is positioned between said second portion of the first diffusion layer and said first portion of the first diffusion layer;

said bipolar transistor including said second portion of said first diffusion layer as a collector, said second portion of said second diffusion layer as an emitter, and said second conductive-type region as a base.

5,910,676

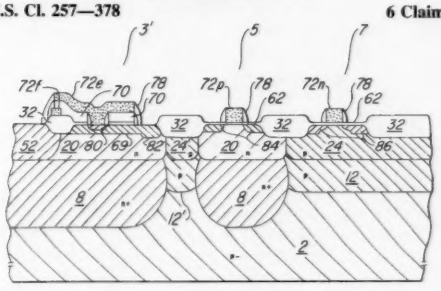
METHOD FOR FORMING A THICK BASE OXIDE IN A BICMOS PROCESS

Scott H. Prengle, and Robert H. Eklund, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application No. 07/895,535, Jun. 8, 1992, abandoned, which is a division of application No. 07/785,174, Oct. 29, 1991, Pat. No. 5,171,702, which is a continuation of application No. 07/383,960, Jul. 21, 1989, abandoned. This application Dec. 10, 1993, Appl. No. 165,553.

Int. Cl.[6] **H01L** *29/73;29/417*

U.S. Cl. 257—378 **6 Claims**



1. A single polysilicon layer BiCMOS structure at a semiconductor surface of a body, comprising:

a bipolar transistor, comprising:

a collector region of a first conductivity type and having a first impurity concentration;

an intrinsic base region of a second conductivity type disposed at said semiconductor surface and within said collector region;

an emitter region of said first conductivity type disposed at said semiconductor surface and within said intrinsic base region;

a thick dielectric layer, directly adjacent said intrinsic base region and having a contact therethrough to said emitter region; and

an emitter electrode, disposed over said thick dielectric layer such that said thick dielectric layer separates said emitter electrode from said intrinsic base region, wherein said emitter electrode is in contact with said emitter region through said contact;

an insulated gate field effect transistor, comprising:

a well region of said first conductivity type and having said first impurity concentration;

a gate dielectric comprising thermal silicon dioxide of a thickness substantially thinner than a thickness of said thick dielectric layer of said bipolar transistors, disposed over a portion of said well region;

a gate electrode disposed over said well region and insulated therefrom by said gate dielectric;

source/drain regions of said second conductivity type and having a second impurity concentration disposed at said semiconductor surface on both lateral sides of said gate electrode and within said well region;

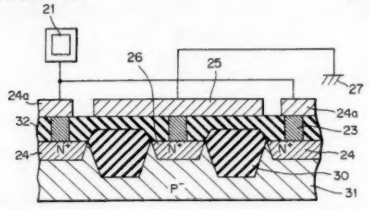
an isolation structure disposed at said semiconductor surface between said bipolar transistor and said insulated-gated field effect transistor; and

sidewall dielectric filaments, disposed laterally adjacent said emitter electrode and said thick dielectric layer of said bipolar transistor, and laterally adjacent said gate electrode of said insulated-gate field effect transistor.

5,910,677
SEMICONDUCTOR DEVICE HAVING A PROTECTION CIRCUIT

Hitoshi Irino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 23, 1997, Appl. No. 997,093
Claims priority, application Japan, Dec. 27, 1996, 8-349246
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—393 **15 Claims**



1. A semiconductor device having a protection circuit comprising:

a substrate;

an internal circuit formed at a surface of said substrate; and

a protection circuit, connected to an input end of said internal circuit, for preventing said internal circuit from destroying due to an excess voltage, said protection circuit having,

a gate electrode formed on said substrate in a shape zigzagging in a wavelike form in a planar view and set to a ground potential,

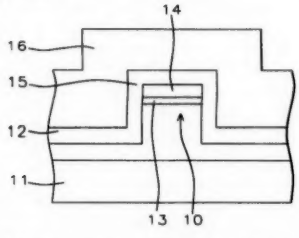
a first diffusion layer connected to said input end of said internal circuit and formed in one of two diffusion regions of said surface of said substrate, said regions being defined by said gate electrode, and

a second diffusion layer set to said ground potential and formed in the other one of said two diffusion regions, one of said first diffusion layer and said second diffusion layer being a source diffusion layer, the other region being a drain diffusion layer.

5,910,678
RAISED FUSE STRUCTURE FOR LASER REPAIR

Yung-Song Lou, Yee-Lan County; Ching-Cherng Rou, Miao-Li County; Ting Chou, Taipei County; Chao-Ming Koh; Shin-Chi Lee, both of Hsin Chu County, and Chuen-Nan Chen, Hsin chu, all of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Division of application No. 08/831,877, Apr. 2, 1997, Pat. No. 5,729,042. This application Dec. 22, 1997, Appl. No. 995,343.
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—529 **6 Claims**



1. A fusible link structure, that is part of a semiconductor integrated circuit, comprising:

a semiconductor substrate, including said integrated circuit;

a first insulating layer on said semiconductor substrate;

a pedestal, having top and bottom surface and comprising the same material as said first insulating layer, said bottom surface resting on said first insulating layer;

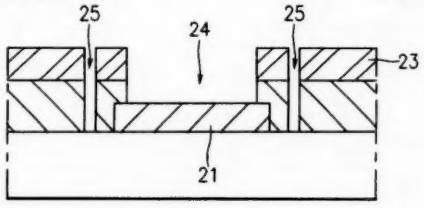
a layer of fusible material further comprising a layer of polycrystalline silicone, between about 100 and about 2,000 Angstrom units thick, in contact with the top surface of said pedestal, and a layer of tungsten silicide, between about 1,500 and about 3,000 Angstrom units thick, over said layer of polycrystalline silicone, patterned into a line shape and connected to said integrated circuit; and

a second insulating layer that covers said fusible layer, said pedestal, and said first insulating layer.

5,910,679
METHOD FOR FABRICATING SEMICONDUCTOR DEVICE HAVING A CRACK RESISTANT CONTACT HOLE AND A SEMICONDUCTOR DEVICE HAVING A CRACK RESISTANT HOLE

So Yon Kim, Chungcheongbuk-do, Rep. of Korea, assignor to LG Semiconductor Co., Ltd., Cheongju-Si, Rep. of Korea

Filed Oct. 31, 1997, Appl. No. 962,269
Claims priority, application Rep. of Korea, Dec. 30, 1996, 96-76874
Int. Cl.[6] H01L *29/06;23/48;23/52;29/40*
U.S. Cl. 257—622 **9 Claims**



1. A semiconductor device, comprising:

a substrate having a chip region and a scribe lane region;

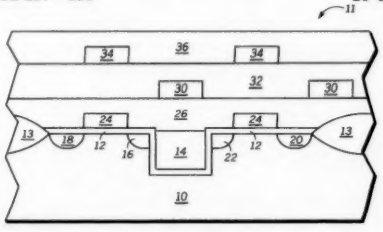
a lower layer pattern formed on the scribe lane region;

an insulating film formed over the substrate including the lower layer pattern, the insulating film including a contact hole exposing the lower layer pattern and including a groove surrounding the contact hole.

5,910,680
GERMANIUM SILICATE SPIN ON GLASS SEMICONDUCTOR DEVICE AND METHODS OF SPIN ON GLASS SYNTHESIS AND USE

Papu D. Maniar, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of application No. 07/807,327, Dec. 16, 1991, abandoned. This application Mar. 21, 1994, Appl. No. 215,170.
Int. Cl.[6] H01L *23/58*
U.S. Cl. 257—650 **20 Claims**



1. A semiconductor device comprising:

a substrate material;

a plurality of device layers overlying the substrate material;

a layer of a spin on glass also overlying the substrate material, the spin on glass comprising:

on the order of 0% to 20% by volume of tetraethylorthosilicate (TEOS);

on the order of 0.01% to 20% by volume of tetraethylorthogermanate (TEOG);

on the order of 0% to 1% by volume the equivalent of nitric acid (HNO_3);

on the order of 70% to 85% by volume of alcohol; and

a remaining balance of water, wherein the ratio of volume of water to the sum of volume of TEOS and TEOG is less than 0.80.

5,910,681

RESIN SEALED SEMICONDUCTOR DEVICE

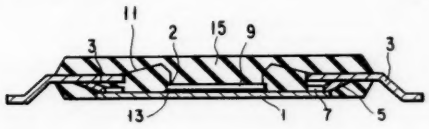
Hiroyuki Kozono, Omiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 13, 1997, Appl. No. 846,506

Claims priority, application Japan, May 15, 1996, 8-119815

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—666 **2 Claims**



1. A resin-sealed semiconductor device comprising:

a bed;

a conductive film formed on the bed, wherein the conductive film has a plated surface;

a semiconductor chip on the conductive film;

a lead section comprised of a plurality of leads arranged at given intervals around the semiconductor chip over the bed and electrically connected to the semiconductor chip;

tie bars connected between the leads in the lead section and the bed, and having forward end portions of the plurality of leads positioned over an area of the bed; and

a resin with which the semiconductor chip is covered and sealed in such a state that one surface of the bed is exposed to an outside.

5,910,682

SEMICONDUCTOR CHIP STACK PACKAGE

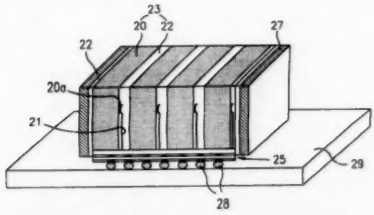
Chi-Jung Song, Daejon, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jun. 16, 1997, Appl. No. 876,436

Claims priority, application Rep. of Korea, Jun. 17, 1996, 96/21865

Int. Cl.[6] H01L *23/02*

U.S. Cl. 257—685 **19 Claims**



1. A semiconductor chip stack package, comprising:

a plurality of semiconductor chips having a plurality of chip pads formed on a first surface;

a plurality of wires on the first surface of each of the plurality of semiconductor chips respectively coupling a corresponding one of the plurality of chip pads to a corresponding edge portion of the semiconductor chip;

a package body including the plurality of semiconductor chips stacked to interpose a first adhesive medium on said each of the plurality of semiconductor chips;

a tab tape attached on a first side surface of the package body using a second adhesive medium, wherein the tab tape comprises,

a pair of adhesive layers each having a plurality of holes, and

a metallic layer formed between the pair of adhesive layers;

a filling agent to fill the plurality of holes; and

a conductive ball array coupled to the filling agent in the plurality of holes.

5,910,683

POWER SEMICONDUCTOR MODULE

Hans-Peter Lips, Adelsdorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

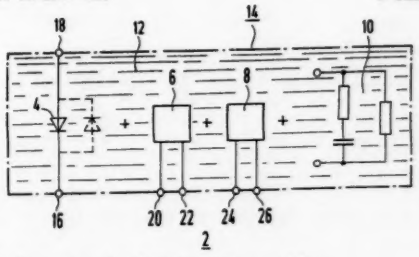
PCT No. PCT/DE96/01228, § 371 Date May 11, 1998, § 102(e) Date May 11, 1998, PCT Pub. No. WO97/04518, PCT Pub. Date Feb. 6, 1997

PCT Filed Jul. 8, 1996, Appl. No. 131

Claims priority, application Germany, Jul. 17, 1995, 295 11 510 U

Int. Cl.[6] H01L *23/34*

U.S. Cl. 257—723 **9 Claims**



1. A power semiconductor module comprising:

a relieving network;

at least one power semiconductor switch having a first supply terminal and a second supply terminal;

a control electronics device coupled to the power semiconductor switch and having a first gate terminal and a second gate terminal; and

a cooling system coupled to the control electronics device and having a first coolant connection and a second coolant connection,

wherein the relieving network, the power semiconductor switch, the control electronics device, and the cooling system are cast within an insulating medium forming a solid block, and wherein the first and second supply terminals, the first and second gate terminals, and the first and second coolant connections project out from the block.

5,910,684

INTEGRATED CIRCUITRY

Gurtej S. Sandhu, and Ravi Iyer, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of application No. 08/552,880, Nov. 3, 1995, Pat. No. 5,665,644. This application Sep. 3, 1996, Appl. No. 708,116.

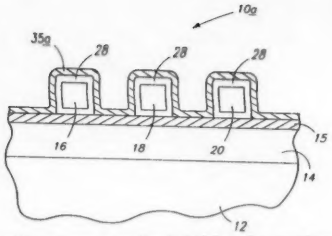
Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—758 **1 Claim**

1. Integrated circuitry comprising:

an electrically insulative substrate;

pair of adjacent electrically conductive interconnect lines provided over the electrically insulative substrate, the electrically conductive interconnect lines being spaced from one another, each of the interconnect lines having a top, an opposing pair of sidewalls, a bottom, a maximum cross-sectional width and



a maximum cross-sectional height, the maximum cross-sectional width being defined as a distance between the opposing sidewalls, and the maximum cross-sectional height being defined as a distance between the top and bottom, the interconnect lines being a first interconnect line and a second interconnect line; the pair of sidewalls of the first interconnect line being a first inner sidewall and a first outer sidewall, wherein the first inner sidewall is nearer the second interconnect line than is the first outer sidewall; the pair of sidewalls of the second interconnect line being a second inner sidewall and a second outer sidewall wherein the second inner sidewall is nearer the first interconnect line than is the second outer sidewall;

an electrically insulative material over the interconnect line tops, sidewalls and bottoms;

an electrically conductive material over the insulative material and surrounding the tops, sidewalls and bottoms of the conductive lines, the electrically conductive material being predominately coextensive with the interconnect the electrically conductive material being substantially equidistantly spaced from the top, bottom and sidewalls of each of the interconnect lines, the electrically insulative material being between the electrically conductive material and each of the interconnect lines and comprising a substantially uniform thickness over the tops, sidewalls and bottoms of the conductive lines, the thickness of the electrically insulative material between the electrically conductive material and the interconnect lines being less than either of the maximum cross-sectional heights or maximum cross-sectional widths of the interconnect lines; and

the electrically conductive material which extends along the first inner sidewall being spaced from the electrically conductive material which extends along the second inner sidewall.

5,910,685

SEMICONDUCTOR MEMORY MODULE HAVING DOUBLE-SIDED STACKED MEMORY CHIP LAYOUT

Masayuki Watanabe, Yokohama; Toshio Sugano, Kokubunji; Seiichiro Tsukui, Komoro; Takashi Ono, Akita, and Yoshiaki Wakashima, Kawasaki, all of Japan, assignors to Hitachi Ltd.; Hitachi Tobu Semiconductor, Ltd., and Akita Electronics, Co., Ltd., all of Japan

Continuation of application No. 08/763,469, Dec. 10, 1996, Pat. No. 5,708,298, which is a continuation of application No. 08/323,709, Oct. 18, 1994, Pat. No. 5,587,341, which is a continuation of application No. 07/890,423, May 29, 1992, abandoned, which is a division of application No. 07/796,873, Nov. 25, 1991, Pat. No. 5,138,438, which is a continuation of application No. 07/607,411, Oct. 31, 1990, abandoned, which is a continuation of application No. 07/209,739, Jun. 22, 1988, Pat. No. 4,982,265. This application Dec. 3, 1997, Appl. No. 984,330.

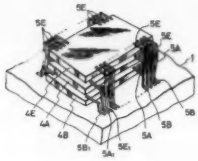
Claims priority, application Japan, Jun. 24, 1987, 1-155478; Sep. 11, 1987, 1-226307

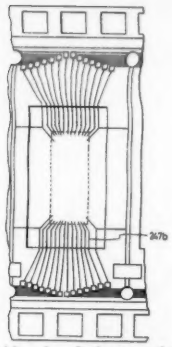
Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—777 **14 Claims**

1. A semiconductor memory module comprising:

(a) a substrate of a rectangular shape having a first surface, a second surface opposite to said first surface, a pair of longer edges and a pair of shorter edges, said pair of longer edges





extending in a first direction, said pair of shorter edges extending in a second direction substantially perpendicular to said first direction, said substrate having a plurality of wirings and a plurality of terminals arranged along one of said pair of longer edges in said first direction;

(b) a first device disposed on said first surface of said substrate and having first leads, and

(c) a plurality of stacked devices disposed on said first surface of said substrate, each of said stacked devices including a second device and a third device stacked over said second device, said second device having a semiconductor memory chip and second leads, said third device having a semiconductor memory chip and third leads, said second and third leads of said second and third device being electrically connected to said semiconductor memory chips of said second and third devices respectively;

wherein first ones of said stacked devices are arranged between said first device and one of said pair of shorter edges and are arranged at a predetermined interval in said first direction,

wherein first ones of said first leads of said first device are electrically connected to said first and second ones of said stacked devices by first ones of said plurality wirings,

wherein second ones of said first leads of said first device are electrically connected to ones of said plurality of terminals of said substrate by second ones of said plurality of wirings, and

wherein said first device inputs a predetermined signal to said first and second ones of said stacked devices in response to a signal inputted to said ones of said plurality of terminals.

5,910,686

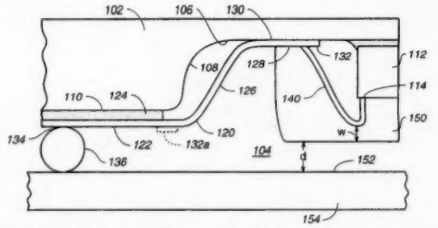
CAVITY DOWN HBGA PACKAGE STRUCTURE

Ahmad Hamzehdoost, Sacramento, and Robert J. Martin, Salida, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jul. 23, 1998, Appl. No. 121,792

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—778 **12 Claims**



1. A cavity-down HBGA integrated-circuit package for an integrated-circuit die, comprising:

an integrated-circuit die having a pair of opposing surfaces, one of which is a die-mounting surface and the other surface of which has wire-bonding pads formed thereupon;

a die-carrier/heat spreader which has a die-cavity formed through its lower surface, wherein the die-cavity is defined by a top interior surface and interior side walls, wherein the die-mounting surface of the integrated-circuit die is attached to the top interior surface of the die-cavity, and wherein the die-carrier/heat spreader further includes a lower surface outside of and surrounding the cavity;

a first portion of an insulated tape layer which extends over the lower outside surface of the die-carrier/heat spreader outside of the die-cavity;

the insulated tape layer also having second portions which are located inside the die-cavity of the die-carrier/heat sink and which second portions have wire-bonding sites formed thereupon;

a plurality of bonding-wire loops, each of which is looped between and bonded to one of the wire-bonding pads formed on the integrated-circuit die and a respective one of the wire-bonding sites formed on the insulated tape layer within the die-cavity to form bonding-wire loops;

wherein a number of conductive traces are formed on the insulated tape layer to connect the wire-bonding sites located inside of the die-cavity to respective selective solderable areas formed on the insulated layer outside of the die-cavity;

wherein the selective solderable areas on the insulated layer and outside of the die-cavity are arranged in a grid pattern on the bottom side of a die-down HBGA package;

a plurality of solder balls attached to respective selective solderable areas formed on the insulated layer outside of the die-cavity; and

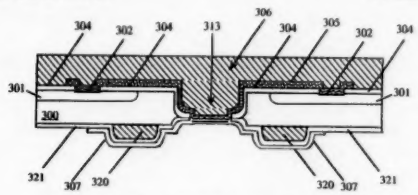
sealing means for covering and sealing the integrated-circuit die, the bonding wires, said sealing means having a lower outside surface formed therein and adapted to be spaced apart from a surface to which an HBGA package is mounted.

5,910,687

WAFER FABRICATION OF DIE-BOTTOM CONTACTS FOR ELECTRONIC DEVICES

Changsheng Chen, Santa Clara; Phil P. Marcoux, Mountain View; Wendell B. Sander, Los Gatos, and James L. Young, Mountain View, all of Calif., assignors to ChipScale, Inc., San Jose, Calif.

Filed Jan. 24, 1997, Appl. No. 788,762
Int. Cl.[6] **H01L** *23/48;23/52;29/40*
U.S. Cl. 257—784 **44 Claims**



1. An electronic device having a set of contacts, the device comprising:

a substrate having an electronic circuit having a set of connection points;

an encapsulant having a first portion located above the electronic circuit and the substrate and a second portion extending below the circuit edge forming a protrusion;

an upper set of wires, each having an inner portion located between the substrate and the encapsulant and connecting with one of the connection points, and each having an outer portion extending onto the encapsulant protrusion;

a set of standoffs formed below the bottom surface the substrate; and

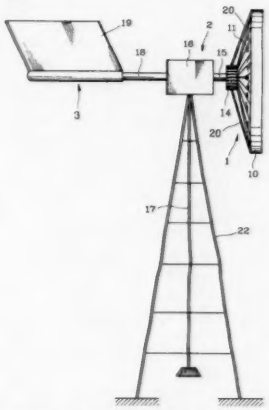
a lower set of wires each connecting to one of the upper wires on the encapsulant protrusion where the upper wire is not covered by the substrate, and each lower set of wires extending onto one of the standoffs.

5,910,688

WINDMILL

Wan-Tsai Li, No. 4-9, Shetzu Village, Hsinwu Hsiang, Taoyuan, Taiwan

Filed May 12, 1997, Appl. No. 854,292
Int. Cl.[6] **F03D** *7/04*
U.S. Cl. 290—55 **7 Claims**



1. An improvement for windmill comprising:

a rotor unit for converting wind energy to mechanical energy including a hollow cylindrical hub with an axial shaft opening and a plural number of axial slots formed in the periphery of the hub, an annular outer ring formed by an L-shaped cross section bar, at least two brackets for supporting the outer ring on the hub and a plural number of blades with one end thereof fixedly engaged with the outer ring and with another end thereof engaged with the slots in the hub;

a transmission unit for delivering output power received from the rotor unit including a transmission box with one end connecting with the rotor unit via a shaft and an output spindle located at another end thereof for delivering output power for productive use; and

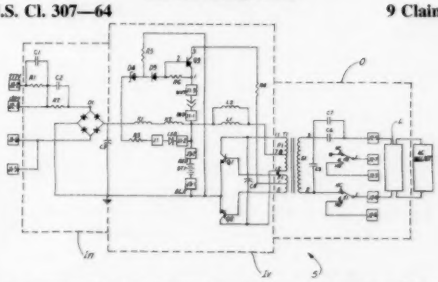
a stabilizer connected with the transmission unit at a third end thereof opposite to the rotor unit for reducing the swaying of the windmill in the wind.

5,910,689

GENERATOR STANDBY BALLAST

Alexander L. Ertz, III, Germantown; Thomas A. Mascari, Jr., Memphis, and Reginald J. Rodriguez, Germantown, all of Tenn., assignors to The Bodine Company, Inc.

Filed Apr. 28, 1997, Appl. No. 847,781
Int. Cl.[6] **H02J** *09/06*
U.S. Cl. 307—64 **9 Claims**



1. A standby backup ballast for a fluorescent lamp in a lighting circuit normally powered by a primary AC power supply having a standby generator for providing auxiliary AC power to the lighting circuit on failure of the primary AC supply, comprising:

a. A battery having a high discharge rate;

b. A rectifier charging circuit adapted to be connected to be powered by the primary AC supply to the lighting circuit during normal operation of the primary AC power supply, said charging circuit disconnectably connected to said battery while the primary AC supply is providing AC power to the lighting circuit;

c. An inverter disconnectably connected to said battery upon failure of the primary AC supply and during startup and stabilized operation of the standby generator, the output of said inverter switchably oscillating the voltage of said battery to create an AC output current at said battery voltage to an output circuit including a transformer to step up the inverter created AC output from battery level voltage to a continuing AC voltage approximately equal to the rated voltage of the lamp, said output circuit disconnectably connected to the fluorescent lamp in the lighting circuit during the period said inverter is connected to said battery; said output circuit additionally including capacitive reactance in series with said fluorescent lamp, selected to pass an initial AC voltage surge to the connected lamp as said inverter is initially connected to said battery and thereafter limit the AC current of said connected output circuit to a value substantially at the rated current of the fluorescent lamp during the period starting at primary AC system failure and ending when the standby generator provides stabilized auxiliary AC power to the connected fluorescent lamp;

whereby said standby backup ballast, upon failure of the primary AC supply and during the interim period as the standby generator comes on line to supply auxiliary stabilized AC power to the lighting circuit, said backup ballast supplies the fluorescent lamp with interim AC power, at sufficient voltage to start the lamp illuminating and thereafter supplying sufficient AC current to operate the lamp substantially at its rated lumen level.

5,910,690

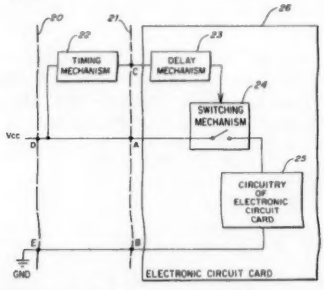
HOTSWAPPABLE CHASSIS AND ELECTRONIC CIRCUIT CARDS

Paul C. Dorsey, Merrimack, N.H.; Kevin M. Frazier, Reading, Mass.; David J. Breig, Maple Grove, Minn., and Mehmet H. Duymazlar, Nashusa, N.H., assignors to Cabletron Systems, Inc., Rochester, N.H.

Filed Feb. 11, 1997, Appl. No. 797,351

Int. Cl.[6] G06F *13/00*

U.S. Cl. 307—141 **27 Claims**



1. A system for controlling application of power to component, comprising:

a chassis having a chassis power connection and at least one slot, each slot having a slot interface;

at least one electronic component comprising at least one circuit card, each component having a component interface for coupling with the slot interface, and a switch mechanism for controlling an application of power from the chassis power connection to circuitry on the component;

an associated timing mechanism for each slot and component pair, the timing component located on one of the chassis and component;

an associated delay mechanism for each slot and component pair located on the other one of the chassis and component;

wherein when the component interface and slot interface are coupled the associated timing mechanism and delay mechanism are coupled to provide a combined output to switch mechanism for a controlled application of power from the chassis power connection to the component circuitry.

5,910,691

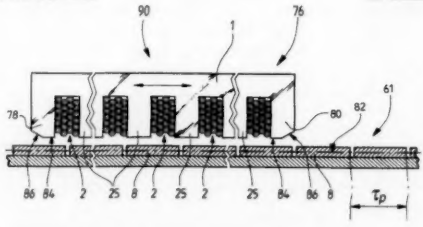
PERMANENT-MAGNET LINEAR SYNCHRONOUS MOTOR

Nicolas Wavre, Crêt-Taconnet 40, CH-2000, Neuchâtel, Switzerland

Continuation-in-part of application No. 08/406,599, Mar. 20, 1995, Pat. No. 5,642,013. This application Mar. 7, 1997, Appl. No. 813,152.

Int. Cl.[6] H02K *41/00*

U.S. Cl. 310—12 **12 Claims**



1. A synchronous linear motor comprising:

an inductor comprising a plurality of permanent magnets arranged in a regular manner with a determined pole pitch τp on a flux-returning sole, said permanent magnets defining a general plane of the linear motor;

an armature, facing said inductor, formed by a pack of ferromagnetic laminations forming a yoke;

a plurality of teeth formed by said ferromagnetic laminations, having a tooth pitch τn, forming at their free ends heads having substantially identical first widths, and forming slots between said teeth having substantially identical second widths between said heads, the sum of said first and said second widths defining said tooth pitch τn;

a plurality of coils disposed in said slots so that each of them surrounds one tooth of said plurality of teeth;

first and second end teeth on each end of said plurality of teeth and defining two additional slots each having substantially said identical second width, the first and second teeth each having a head profile with a first surface part, adjacent said plurality of teeth and forming a substantially constant gap with respect to said general plane, and a second surface part adjacent said first surface part and defining a gap with said general plane which increases in the direction away from said plurality of teeth;

said second width to said tooth pitch τn having a ratio wherein the reluctant effect of all the slots is essentially less than the reluctant effect of any one of the slots;

said first and second end teeth being magnetically phase shifted to reduce the reluctant effect of said first and second end teeth to less than the individual reluctant effect of the first or second end tooth, said surface profile of said first and second end teeth and said first and second widths defined by said plurality of teeth reducing the total reluctant effect of the linear motor to less than said reluctant effect of the first and second end teeth and less than said reluctant effect of all of the slots.

5,910,692

BALL-THREADED SHAFT ANTI-SLIPOUT TYPE LINEAR ACTUATOR

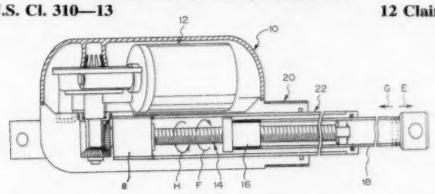
Koichi Saeda; Minoru Komada, both of Osaka-fu; Kenichiro Nakamura, Shiga-ken, and Toshio Mitsuyama, Osaka-fu, all of Japan, assignors to Tsubakimoto Chain Co., Osaka-fu, Japan

Filed Dec. 4, 1997, Appl. No. 985,046

Claims priority, application Japan, Dec. 6, 1996, 8-327021

Int. Cl.[6] H02K *41/00;* **F16H** *25/22*

U.S. Cl. 310—13 **12 Claims**



1. A linear actuator having a housing and an output shaft mounting a nut, a ball-threaded shaft adapted for moving said nut forward and backward with respect to the housing by linear reciprocating movement of the nut on said ball-threaded shaft, and a *driving motor normally and reversely rotating said ball-threaded* shaft, said actuator comprising:

an axial disk fixedly mounted on a proximal end of said ball threaded shaft;

a first tension receiving rotational body loosely fitted in said housing at said proximal end adjacent to the nut between said axial disk and said nut;

thrust bearing components interposed between the opposed surfaces of said axial disk and said first tension receiving rotational body;

a coil spring frictionally engaging the outer periphery of said axial disk and said first tension receiving rotational body;

an internal annular groove in said housing surrounding said ball-threaded shaft between said first tension receiving body and said nut;

a C-shaped tension stopper spread and inserted into said internal annular groove of said housing and having a rectangular cross section, said cross section having a tension-receiving surface preventing axial displacement of said first body in a direction of tension exerted on said ball threaded shaft and an inner peripheral circumferential surface; and

a second tension receiving rotational body disposed between said first tension receiving rotational body and said tension stopper to transmit tension to said tension stopper from said axial disk, said thrust bearing components and said first tension receiving rotational body, characterized in that

said second tension receiving rotational body is formed with a reduced diameter preventing shoulder forming an annular recess with a tension exerting axial surface confronting said tension receiving surface of said tension stopper and a tension stopper reduced diameter preventing circumferential surface opposed to said inner peripheral circumferential surface of said tension stopper with a slight clearance.

5,910,693

SCANNER MOTOR COUPLED WITH A POLYGON MIRROR

Sang Hwan Park, Kyunggi-do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Suwon, Rep. of Korea

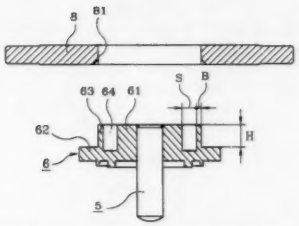
Filed Nov. 24, 1997, Appl. No. 976,548

Claims priority, application Rep. of Korea, Apr. 29, 1997, 97-9062 U

Int. Cl.[6] H02K *7/00;5/16;5/00*

U.S. Cl. 310—67 R ***9 Claims***

9. A scanner motor including a stator assembly, a rotor assembly rotatable relative to said stator assembly, and a housing rotatable with said rotor assembly and for accepting a mirror, the improvement comprising:



said housing having an inner portion surrounded by a fitting portion, and a groove between said inner portion and said fitting portion, said fitting portion having an outer periphery and an inner periphery distanced from an outer periphery of said inner portion by said groove; and

a mirror having an inner periphery fitted against said outer periphery of said fitting portion.

5,910,694

ELECTRONIC COMPONENT COOLING APPARATUS

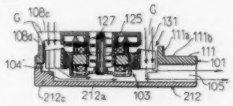
Shinjiro Yokozawa, Tokyo; Nobumasa Kodama, Ueda; Toshiki Ogawara, Toubumachi; Yuichi Kodaira, and Michinori Watanabe, both of Ueda, all of Japan, assignors to Sanyo Denki Co., Ltd., Tokyo, Japan

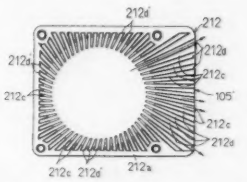
Division of application No. 08/672,375, May 29, 1996, Pat. No. 5,810,554. This application Sep. 17, 1998, Appl. No. 154,920.

Claims priority, application Japan, May 31, 1995, 7-134392

Int. Cl.[6] H02K 5/00

U.S. Cl. 310—89 **5 Claims**





1. An electronic component cooling apparatus comprising;

a motor including a rotor and a stator;

an impeller securely mounted on said rotor and including a plurality of blades for drawing air from one side in an axial direction of a revolving shaft of said motor;

a casing defining a cavity in which said motor and said impeller are received, said casing being formed with an open end of said cavity defined at said one side of said axial direction and a discharge port for discharging air in only one direction perpendicular to said axial direction, said casing being constructed of a first casing section including the open end and a second casing section being constituted by a heat sink;

said heat sink having a base formed into a substantially rectangular outer configuration with four corners and having a plurality of radiation fins arranged thereon, at least some of said plurality of radiation fins being arranged in proximity to said discharge port; and,

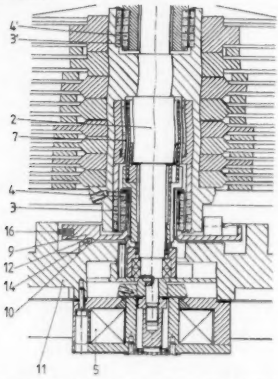
a center of said impeller being spaced from a center of said heat sink toward one corner of said four corners of said heat sink, said one corner being one of two corners positioned opposite to said discharge port and being located in a direction opposite to a direction of rotation of the impeller.

5,910,695

DAMPING DEVICE FOR A MAGNETICALLY SUPPORTED ROTOR

Heinrich Lotz, Wetzlar, Germany, assignor to Pfeiffer Vacuum GmbH, Asslar, Germany

Filed Mar. 25, 1998, Appl. No. 47,992
Int. Cl.[6] H02K *7/09;5/24*
U.S. Cl. 310—90.5 **8 Claims**



1. A damping device for a rotor supported by an arrangement of magnetic bearings including at least one radial bearing formed of a stator magnet and a rotor magnet, the damping device comprising:

an intermediate member fixedly connected with the rotor by the stator magnet of the at least one radial bearing; and

means for connecting the intermediate member with a stationary part in an axial direction, the connecting means comprising spherical recesses formed in the intermediate member and in the stationary part and balls located in opposite recesses of the intermediate member and the stationary part,

wherein the spherical recesses have a diameter larger than a diameter of the balls, and

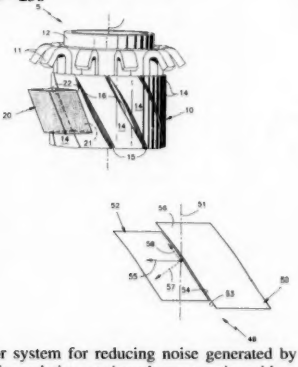
wherein the balls are formed of an elastically deformable material having a modulus of elasticity smaller than a modulus of elasticity of a metal.

5,910,696

REDUCED NOISE COMMUTATOR SYSTEM

Hongling Kang, Livonia, Mich., assignor to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed Dec. 1, 1997, Appl. No. 980,678
Int. Cl.[6] H02K *13/00*
U.S. Cl. 310—236 **14 Claims**



1. A motor system for reducing noise generated by contacting surfaces having relative motion along an axis, said motor system comprising:

a first brush having a first surface oriented at an angle to the axis of less than ninety (90) degrees;

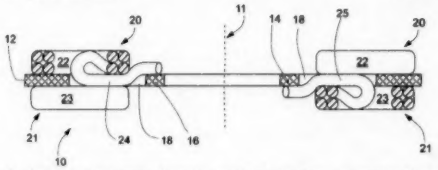
a plurality of commutator bars for contacting said first surface, each commutator bar of said plurality being oriented substantially parallel to said first surface.

5,910,697

HIGH-POWER, LOW-VOLTAGE AXIAL AIR-GAP ELECTRICAL MACHINE HAVING A COMPACT STATOR

Alexander Sromin, Ashdod, and Moshe Hiterer, Jerusalem, both of Israel, assignors to Samon Engineering Ltd., Nes Ziona, Iceland

Filed Jan. 17, 1997, Appl. No. 785,226
Int. Cl.[6] H02K *3/00;3/28*
U.S. Cl. 310—254 **9 Claims**



1. An axial air-gap electric machine having a rotational axis, comprising:

(a) a generally planar stator, concentric with the rotational axis including:

(i) a flat supporting member having a first axial side and a first eccentric recess, and

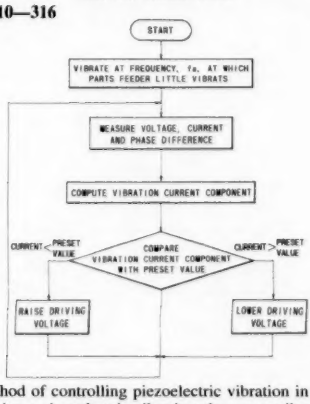
(ii) a first coil structure, including a majority exposed portion on said first axial side and a minority concealed portion, said exposed and concealed portions including wire at least about as thick as said supporting member, said concealed portion at least partially occupying said first recess, said exposed portion overlying said concealed portion a majority of said wire of said exposed and concealed portions being substantially parallel to said supporting member.

5,910,698

METHOD AND APPARATUS FOR CONTROLLING PIEZOELECTRIC VIBRATION

Susumu Yagi, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

Filed Aug. 4, 1997, Appl. No. 905,401
Claims priority, application Japan, Aug. 7, 1996, 8-225840
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—316 **6 Claims**



1. A method of controlling piezoelectric vibration in an apparatus comprising a piezoelectric vibrating element, a vibrating unit to which the piezoelectric vibrating element is attached, and a driving

unit for driving the piezoelectric vibrating element, which method comprising the steps of:

vibrating said piezoelectric vibrating element at a frequency at which said vibrating unit does not vibrate substantially;

detecting a voltage, a current, and a phase difference between the voltage and the current while the piezoelectric vibrating element is driven at said frequency;

driving said piezoelectric vibrating element at a frequency required for actually vibrating the vibrating unit;

detecting a driving voltage and a driving current while said vibrating unit is vibrated;

obtaining a current component not relating to vibration of the vibrating unit from said detected voltages, currents and the phase difference;

computing a current component relating to said vibration of the vibrating unit from the current component not relating to said vibration; and

controlling the current component relating to said vibration so as to be a prescribed value.

5,910,699

METHOD OF MANUFACTURING A COMPOSITE SUBSTRATE AND A PIEZOELECTRIC DEVICE USING THE SUBSTRATE

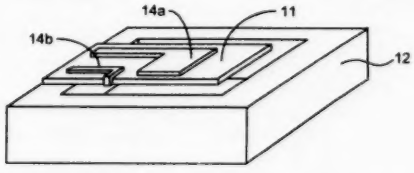
Akihiko Namba; Tetsuyoshi Ogura; Yoshihiro Tomita, all of Osaka, and Kazuo Eda, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of application No. 08/646,451, May 7, 1996, Pat. No. 5,698,471. This application Jun. 16, 1997, Appl. No. 876,287.

Claims priority, application Japan, May 8, 1995, 7-109648

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—320 **10 Claims**



1. A piezoelectric device comprising:

a piezoelectric substrate composed of piezoelectric material and including excitation electrodes on a portion thereof; and

a supporting substrate bonded by one of covalent bonding and ionic bonding to a bonding portion provided on a part of said piezoelectric substrate,

wherein the crystal structure of the piezoelectric substrate at the portion having the excitation electrodes is different from the crystal structure of the piezoelectric substrate at the bonding portion.

5,910,700

DUST SENSOR APPARATUS

David R. Crotzer, 19 Thorndike St., Nashua, N.H. 03060

Provisional application No. 60/042,765, Mar. 20, 1997. This application Mar. 20, 1998, Appl. No. 45,458.

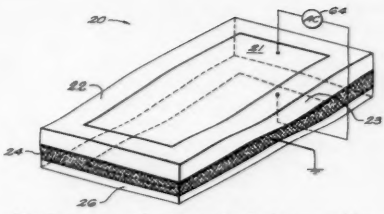
Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—338 **16 Claims**

1. A dust sensing apparatus comprising:

a transducer element comprised of a substrate and having a resonant frequency, said substrate having a top surface and a bottom surface, at least one sensor portion, and at least one conductive portion; said substrate further comprising:

a top layer, a middle layer and a bottom layer, wherein said top layer and said bottom layer are further subdivided into a plurality of segments along an axis substantially orthogonal to a plane defined by said layers;



said at least one conductive portion further comprising at least one segment of said top layer and an opposed segment of said bottom layer; and

said at least one sensor portion comprising the remaining segments of said top layer and said bottom layer;

a plurality of excitation electrodes connected to said substrate, wherein said plurality of excitation electrodes comprises:

at least one source electrode connected to said sensor portion; and

at least one around electrode connected to said conductive portion;

a control circuit connected to said plurality of excitation electrodes, said control circuit producing an input signal having a frequency;

said input signal producing an electric field between said at least one sensor portion and said at least one conductive portion wherein said electric field is sufficient to produce oscillatory vibrational movement of said substrate.

5,910,701

FIELD-EMISSION COLD CATHODE AND MANUFACTURING METHOD FOR SAME

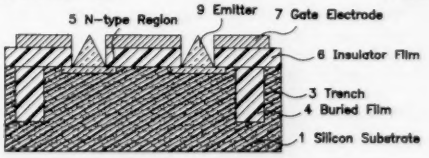
Hisashi Takemura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 5, 1998, Appl. No. 19,469

Claims priority, application Japan, Feb. 10, 1997, 9-026767

Int. Cl.[6] H01J *1/30*

U.S. Cl. 313—309 **7 Claims**



1. A field-emission cold cathode, comprising:

emitters that have acute tips and that are formed on a conductive substrate;

a gate electrode that has openings over said emitters;

trenches formed inside said conductive substrate from the upper surface of said conductive substrate; and

n-type regions of lower resistivity than said conductive substrate that are formed on said conductive substrate surrounded by said trenches; wherein

said emitters are formed on said n-type regions.

7. A manufacturing method for a field-emission cold cathode provided with emitters that are formed on a conductive substrate, and a gate electrode that has openings over said emitters; comprising the steps of:

forming a first insulation film on a surface of an n-type silicon substrate;

forming a mask having openings in a trench formation region surrounding an emitter formation region on said first insulation film and patterning said first insulation film;

forming trenches in said silicon substrate using said first insulation film as a mask;

burying a buried film made up of an insulative film inside said trenches;

removing said buried film and said first insulation film until the surface of said silicon substrate is exposed;

doping n-type impurity atoms of a prescribed concentration onto the exposed silicon substrate to a depth corresponding to a region of spreading current that flows into the substrate from an emitter, in order to form an n-type region having a higher conductivity than said silicon substrate;

forming a second insulation film and a gate electrode film on said n-type region;

forming openings in the emitter formation region of said gate electrode film and second insulation film; and

forming emitters on the n-type region of the openings.

5,910,702

COLOR CATHODE RAY TUBE HAVING AN IMPROVED SHADOW MASK AND SHADOW MASK CONNECTOR

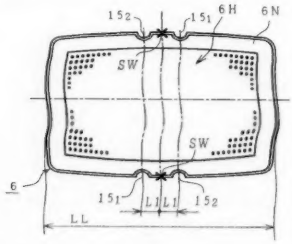
Mutsumi Maehara, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 13, 1997, Appl. No. 969,280

Claims priority, application Japan, Nov. 14, 1996, 8-303091

Int. Cl.[6] H01J *29/07*

U.S. Cl. 313—407 **6 Claims**



1. A color cathode ray tube including a generally rectangular shadow mask having a curved apertured portion having a multiplicity of electron-transmissive apertures, a curved imperforate portion surrounding and integral with said apertured portion and a skirt portion bent back from a periphery of said curved imperforate portion to form a rearwardly extending wall, and a generally rectangular support frame for suspending said shadow mask by spot welding said skirt portion thereto, within a panel portion of said color cathode ray tube;

at least one of short and long sides of said skirt portion containing only a pair of embossments extending in a direction parallel to a longitudinal axis of said color cathode ray tube on opposite sides of said spot welding point of said support frame and said skirt portion at a center of said at least one of short and long sides of said skirt portion within a distance of one fourth or less of a length of said at least one of short and long sides of said generally rectangular shadow mask from said center.

5,910,703

HIGH VOLTAGE SPACER FOR A FLAT PANEL DISPLAY WITH SPECIFIC CROSS SECTION

Huei-Pei Kuo, Cupertino, and Richard R. Baldwin, Saratoga, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 31, 1996, Appl. No. 690,668

Int. Cl.[6] H01J *31/00*

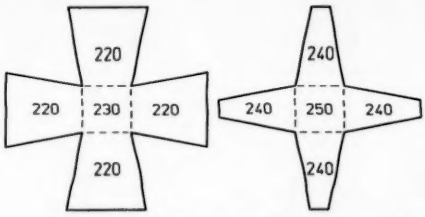
U.S. Cl. 313—482 **17 Claims**

1. A spacer for a flat-panel display, the flat-panel display having a front and back panel, the spacer comprising:

a body; and

N arms extending radially from the body,

wherein N is at least three and the body and the N arms physically contact the front and back panels to thereby separate the front panel from the back panel, the spacer being formed by drawing, and wherein at least one of the N arms extends farther in the radial direction from the body than at least one other of the N arms.



5,910,704

FIELD EMISSION DISPLAY WITH A PLURALITY OF GATE INSULATING LAYERS HAVING HOLES

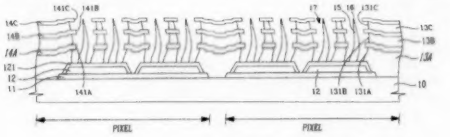
Dae-ho Choo, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 30, 1996, Appl. No. 723,125

Claims priority, application Rep. of Korea, Oct. 31, 1995, 95-39059

Int. Cl.[6] H01J *1/62;63/04*

U.S. Cl. 313—495 **2 Claims**



1. A field emission display comprising:

a substrate;

a plurality of cathode layers provided on said substrate;

a plurality of resistive layers provided on the cathode layers;

a micro tip unit having a plurality of micro tips provided on each resistive layer;

a plurality of gate insulating layers provided on each of said cathode layers, each of said plurality of gate insulating layers having a plurality of holes for accommodating each of said micro tips;

a plurality of gate electrodes provided on said gate insulating layers, each of said plurality of gate electrodes having a plurality of holes corresponding to each hole of said plurality of gate insulating layers,

wherein each of said plurality of gate insulating layers and each of said plurality of gate electrodes are alternately provided on each other, and the diameter of said gate electrode holes are smaller than the diameter of said gate insulating layer holes.

5,910,705

FIELD EMISSION DISPLAY

David A. Cathey, Boise, and Charles Watkins, Meridian, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 08/386,645, Feb. 10, 1995, abandoned. This application Sep. 16, 1997, Appl. No. 931,811.

Int. Cl.[6] H01J *63/00*

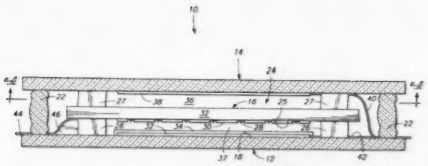
U.S. Cl. 313—496 **15 Claims**

1. A flat-panel field emission display comprising:

a faceplate having a rear surface, the rear surface being coated with a luminescent material;

a connector ridge on the rear surface of the faceplate;

a cathode plate which is positioned rearwardly from the faceplate against the connector ridge, the cathode plate having a front emitter surface which faces the rear surface of the



faceplate, the connector ridge establishing a spacing between the rear surface of the faceplate and the front emitter surface of the cathode plate;

a plurality of cathode plate conductors on the front emitter surface of the cathode plate;

a plurality of faceplate terminal conductors on the rear surface of the faceplate, the terminal conductors having connecting portions which overlie the connector ridge;

a plurality of conductive bonds interposed between the faceplate terminal conductors and the cathode plate conductors to form individual electrical connections therebetween, the faceplate terminal conductors providing accessible electrical connections to the cathode plate conductors.

5,910,707

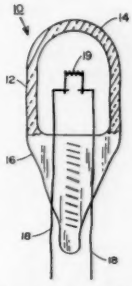
TUNGSTEN HALOGEN LAMP

Dean A. Bell, Marcellus, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Continuation-in-part of application No. 08/398,518, Mar. 3, 1995, abandoned. This application Jun. 25, 1997, Appl. No. 881,904.

Int. Cl.[6] **H01K** *1/22*

U.S. Cl. 313—579 **7 Claims**



1. A glass tungsten halogen lamp which exhibits improved short *wavelength light transmission (transmittance) and emission at less* than about 400 nm, and which comprises a glass envelope which is made of an aluminosilicate glass composition which contains iron in residual or trace amounts and where the concentration of iron is from about 10 ppm to 100 ppm.

5,910,706

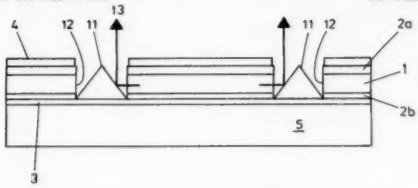
LATERALLY TRANSMITTING THIN FILM ELECTROLUMINESCENT DEVICE

Robert Stevens, Sherwood; Wayne Mark Cranton, Tollerton Notts, and Clive Barrington Thomas, Burton Joyce, all of United Kingdom, assignors to Ultra Silicon Technology (UK) Limited, United Kingdom

Filed Dec. 18, 1996, Appl. No. 781,942

Int. Cl.[6] **H05B** *33/00*

U.S. Cl. 313—498 **20 Claims**



1. A light emitting apparatus comprising:

one or more thin film electroluminescent devices, wherein each said device comprises:

a light generating active phosphor layer sandwiched between dielectric layers fabricated onto a planar substate, wherein said phosphor layer has a thickness in a direction away from said planar substrate;

electrodes formed on the outer surfaces of the dielectric layers, wherein said electrodes provide an AC drive signal to said device thereby causing a generation of light within said phosphor layer by electroluminescence, at least a portion of the light being transmitted substantially laterally to said substrate;

a de-coupling means for decoupling the laterally transmitted light away from the plane of the substrate, wherein said de-coupling means includes a light reflective surface having a predetermined contour, and wherein said light reflective surface extends across said phosphor layer thickness.

5,910,708

GAS DISCHARGE LAMP BALLAST CIRCUIT WITH COMPLEMENTARY CONVERTER SWITCHES

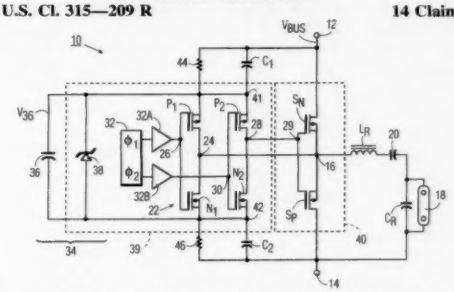
Louis R. Nerone, Brecksville, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 6, 1996, Appl. No. 709,063

This patent is subject to a terminal disclaimer

Int. Cl.[6] **H05B** *37/02*

U.S. Cl. 315—209 R **14 Claims**



1. A ballast circuit for a gas discharge lamp, comprising:

(a) a resonant load circuit incorporating the gas discharge lamp and including a resonant inductance and a resonant capacitance;

(b) a d.c.-to-a.c. converter circuit coupled to said resonant load circuit for inducing an a.c. current in said resonant load circuit, said converter circuit comprising:

(i) first and second converter switches serially connected in the foregoing order between a bus conductor at a d.c. voltage and a reference conductor, and being connected together at a common node through which said a.c. load current flows;

(ii) said first and second converter switches each comprising a control node and a reference node, the voltage between such nodes determining the conduction state of the associated switch;

(iii) the respective control nodes of said first and second converter switches being interconnected; and

(iv) the respective reference nodes of said first and second converter switches being connected together at said common node;

(c) a voltage-limited energy source connected between first and second nodes;

(d) said first node being connected to said bus conductor through a bootstrap capacitor, and said second node being connected to said reference conductor through a bootstrap capacitor; and

(e) a bridge network being connected between said first and second nodes and having:

(i) first and second input nodes on which respective first and second input signals are applied; and

(ii) first and second output nodes respectively connected to said common and control nodes so as to control the switching state of said converter switches;

(f) an oscillator for providing said first and second input signals;

(g) said bridge network being arranged to cause repetitive cycling through at least the following states of said first and second converter switches respectively being:

(i) on and off;

(ii) turned off and already off, and residual energy of said resonant inductance causing a shift in energy from one of said bootstrap capacitors to the other of said bootstrap capacitors via said energy source, thereby replenishing said source with energy;

(iii) off and on;

(iv) already off and turned off, and residual energy of said resonant inductance causing a shift in energy from said other of said bootstrap capacitors to said one of said bootstrap capacitors via said energy source, thereby replenishing said source with energy.

5,910,709

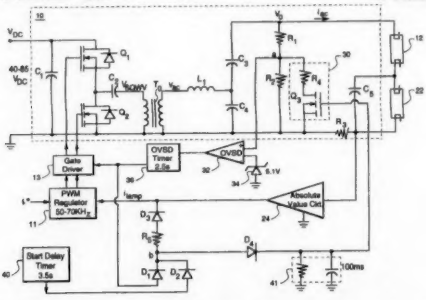
FLORESCENT LAMP BALLAST CONTROL FOR ZERO -VOLTAGE SWITCHING OPERATION OVER WIDE INPUT VOLTAGE RANGE AND OVER VOLTAGE PROTECTION

Ljubisa Dragoljub Stevanovic, Clifton Park; Robert Louis Steigerwald, Burnt Hills, and Mustansir Hussainy Kheralu-wala, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of application No. 08/578,729, Dec. 26, 1995, abandoned. This application Jun. 6, 1997, Appl. No. 870,205.

Int. Cl.[6] **H05B** *37/02*

U.S. Cl. 315—225 **8 Claims**



1. A ballast system for at least one dimmable fluorescent lamp, comprising:

a ballast inverter for driving said at least one dimmable fluorescent lamp to provide light output, said ballast inverter comprising a resonant switching inverter for providing an output voltage for operating said lamp;

a gate driver circuit for providing gating signals to said resonant switching inverter over a frequency range;

an inverter controller for providing control signals to said gate driver circuit for controlling resonant operation of said ballast inverter to start the lamp by sweeping through an operating frequency range beginning with a predetermined relatively high initial frequency and continuously reducing the operating frequency until said output voltage is sufficiently high to start said lamp, said inverter controller providing control signals to said gate driver circuit for maintaining operation above resonance after starting the lamp such that said ballast inverter operates in a substantially zero-voltage switching mode; and

an overvoltage shutdown circuit coupled to said lamp for shutting down said inverter for an overvoltage shutdown period whenever said output voltage exceeds an overvoltage shutdown threshold, said inverter controller again providing control signals for sweeping through the operating frequency range beginning with the predetermined relatively high initial frequency to start the lamp after the overvoltage shutdown period.

5,910,710

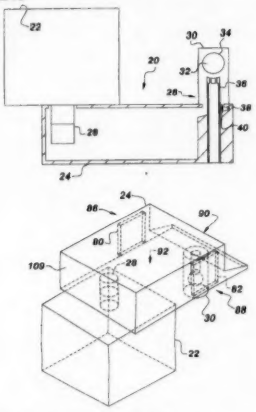
METHOD AND APPARATUS FOR POWERING AN ELECTRODELESS LAMP WITH REDUCED RADIO FREQUENCY INTERFERENCE

James E. Simpson, Gaithersburg, Md., assignor to Fusion Lighting, Inc., Rockville, Md.

Filed Nov. 22, 1996, Appl. No. 754,858

Int. Cl.[6] **H05B** *41/16*

U.S. Cl. 315—248 **35 Claims**



1. An electrodeless lamp, comprising:

a source of high frequency electromagnetic energy at a selected frequency;

a light transmissive envelope, said envelope being filled with a substance which emits light when excited by high frequency electromagnetic energy at said selected frequency;

a waveguide having a wall, said waveguide being disposed to communicate electromagnetic energy from said source to said envelope;

an absorber disposed within said waveguide, said absorber being situated to absorb electromagnetic energy of a spurious signal at a second frequency displaced from said selected frequency, wherein said absorber is a lossy material which is disposed within said waveguide at a selected distance from said wall of said waveguide, wherein said selected distance corresponds to one quarter wavelength for said second frequency.

5,910,711

DISCHARGE LAMP DIMMER CIRCUIT WITH PIEZO-ELECTRIC TRANSFORMER AND ADJUSTABLE CAPACITOR

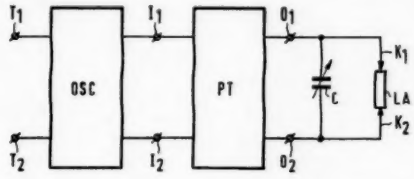
Rebekka Porath, and Achim Hilgers, both of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1997, Appl. No. 976,646

Claims priority, application European Pat. Off., Dec. 2, 1996, 96203406

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—291 **10 Claims**



1. A dimmer circuit for operating a discharge lamp comprising:

an oscillator for generating a high frequency input voltage whose frequency is substantially constant,

a piezo-electric transformer having input terminals coupled to the oscillator and output terminals,

a load circuit coupled to the output terminals of the piezo-electric transformer and comprising terminals for lamp connection, and wherein

the load circuit comprises an adjustable capacitor.

5,910,712

METHOD AND APPARATUS FOR REDUCED DISCHARGE LAMP DRIVER TEST TIME

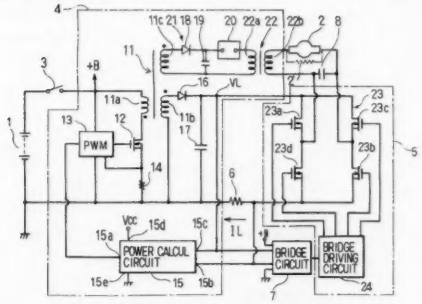
Koichi Toyama, Kariya, Japan, assignor to Denso Corporation, Kariya, Japan

Filed Sep. 18, 1997, Appl. No. 933,514

Claims priority, application Japan, Oct. 14, 1996, 8-271013

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—307 **8 Claims**



1. A discharge lamp driving device comprising:

first means for supplying a discharge lamp with power that is higher than normal during a start-up period and with power that thereafter gradually decreases to normal power during a stabilizing period; and

second means for shortening said stabilizing period when a dummy resistor having a specific resistance is connected to said first means instead of said discharge lamp.

5,910,713

DISCHARGE LAMP IGNITING APPARATUS FOR PERFORMING A FEEDBACK CONTROL OF A DISCHARGE LAMP AND THE LIKE

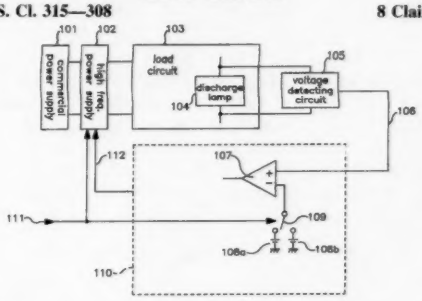
Kenichiro Nishi; Satoshi Nagai; Kentaro Eguchi; Takeshi Arai; Jun Bunya; Kazutaka Shimizu; Koji Shibata, all of Tokyo, and Isamu Ogawa, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Mitsubishi Lighting Fixture Co., Ltd., Kanagawa, both of Japan

Division of application No. 08/816,051, Mar. 11, 1997. This application Aug. 6, 1998, Appl. No. 129,848.

Claims priority, application Japan, Mar. 14, 1996, 8-57736; Mar. 28, 1996, 8-74024

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—308 **8 Claims**



1. A discharge lamp igniting apparatus including a discharge lamp, and a high frequency power supply for supplying high frequency power to this discharge lamp, for controlling an output of this high frequency power supply to control light of said discharge lamp, comprising:

voltage detecting means for detecting a voltage of said discharge lamp;

voltage changing means for changing either the voltage of said discharge lamp detected by this voltage detecting means or a reference voltage in response to a light level of said discharge lamp;

comparing means for comparing said reference voltage with the voltage of said discharge lamp changed by this voltage changing means; and

control means for interrupting, or reducing the output of said high frequency power supply when the voltage of the said discharge lamp becomes high.

5,910,714

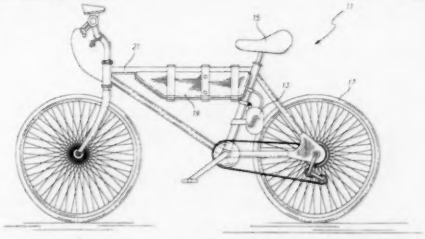
ELECTRICAL POWER ASSIST APPARATUS FOR A WHEELED VEHICLE

W. Darrell Buchanan, and Paul MacCready, both of Monrovia, Calif., assignors to Aerovironment Inc., Monrovia, Calif.

Continuation of application No. 08/420,229, Apr. 11, 1995, abandoned. This application Apr. 23, 1997, Appl. No. 842,450.

Int. Cl.[6] B62M *23/02;* **H02P** *5/16*

U.S. Cl. 318—139 **31 Claims**



1. An electrical power apparatus for assisting a rider in powering a wheeled vehicle, comprising:

a dc motor engageable with a wheel of the vehicle;

a rechargeable battery;

an electrical switch that selectively connects the battery to the dc motor; and

a controller that controllably opens and closes the electrical switch in a predetermined fashion, such that the dc motor drives the vehicle wheel with a torque that varies with a measurement of the vehicle's speed according to a predetermined non-uniform profile that does not vary with any force applied to the vehicle by the rider.

5,910,715

CURRENT CONTROL APPARATUS IN DC MOTOR

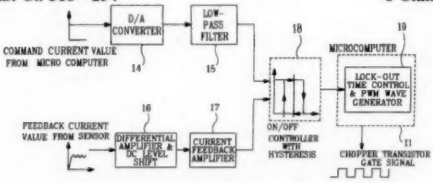
Jong Gun Kim, Kyung Nam; Seong Chul Huh, Taegu, and Ki Ryong Kwon, Kyung Nam, all of Rep. of Korea, assignors to Samsung Heavy Industries Co., Ltd., Seoul, Rep. of Korea

Continuation-in-part of application No. 08/564,759, Nov. 29, 1995. This application Aug. 13, 1997, Appl. No. 910,824.

Claims priority, application Rep. of Korea, Mar. 30, 1995, 95-6981

Int. Cl.[6] H02K *23/00*

U.S. Cl. 318—254 **6 Claims**



1. A current control apparatus for a DC motor system having a motor field coil and a motor armature and driven by a power source, and a chopper transistor for controlling amount of current supplied to the DC motor from the power source, comprising:

current amplifying means for detecting a feedback current value at a rear end of the motor and amplifying the feedback current value;

on-off control means for comparing an input command current value with the amplified feedback current supplied from said current amplifying means and outputting an on-off control signal as a function of the comparison; and

a microcomputer for controlling a duty value of an output pulse wave of a predetermined frequency generated as a function of the on-off control signal and thereby controlling an on-off time of the chopper transistor, said microcomputer having:

a pulse-width modulator for generating said output pulse, said modulator having an interrupt counter for counting a plurality of state values;

means for determining whether said interrupt counter is in an initial state;

means for setting a pulse-duty value of output pulse from the pulse-width modulator to a predetermined current limit value when said interrupt counter is in the initial state;

means for determining, when said interrupt counter is not in the initial state, whether the predetermined current limit value is 0;

means for comparing, if the predetermined current limit value is not 0, the state of said interrupt counter with the predetermined current limit value and thereby controlling an on-off state of said chopper transistor; and

means for turning off said chopper transistor if the predetermined current limit value is 0.

5,910,716

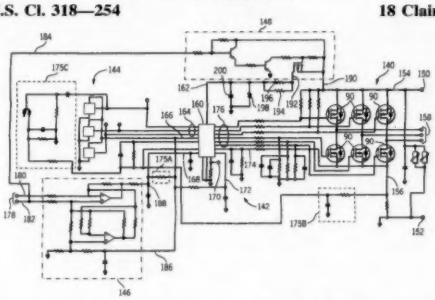
BRUSHLESS DC MOTOR DRIVE

Curtis O. Olsen, Oakdale, and Guy J. Patyk, Hopkins, both of Minn., assignors to Reliance Electric Industrial Company, Cleveland, Ohio

Filed Dec. 16, 1997, Appl. No. 991,174

Int. Cl.[6] H02P *6/08*

U.S. Cl. 318—254 **18 Claims**



1. A motor drive for driving a brushless DC motor at desired rotational velocities, the motor drive comprising:

a drive circuit for converting electrical energy from a source to controlled pulsed energy;

a control circuit coupled to the drive circuit, the control circuit generating control signals and applying the control signals to the drive circuit for regulating the pulsed energy based upon a corrected command signal representative of a desired operating parameter of the motor; and

a command interface circuit, the interface circuit configured to receive an input command signal which is at least partially dependent upon a characteristic of the source, and to generate the corrected command signal based upon the input command signal, the corrected command signal being substantially independent of the characteristic of the source.

15. A motor drive for controlling a brushless DC motor based upon a command signal, the motor drive comprising:

a drive circuit configured to be coupled to a source of energy and to convert the energy to pulsed energy signals;

a control circuit coupled to the drive circuit, the control circuit generating control signals and applying the control signals to the drive circuit for controlling the pulsed energy signals; and

an energy conservation circuit coupled to the control circuit, the energy conservation circuit configured to receive a control signal and to complete a current carrying path to the control circuit when the control signal is above a predetermined threshold level and to interrupt the current path to the control circuit when the control signal is at or below the predetermined threshold level.

5,910,717

CIRCUIT ARRANGEMENT FOR CONTROLLING A REVERSIBLE D.C. MOTOR

Uwe Kaiser, Asslar-Bechlingen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 12, 1997, Appl. No. 854,713

Claims priority, application Germany, Aug. 1, 1996, 196 31 043

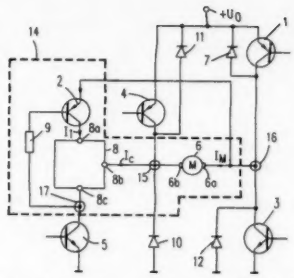
Int. Cl.[6] H02P *1/00*

U.S. Cl. 318—283 **15 Claims**

1. A circuit arrangement for controlling a d.c. motor which can be driven in two directions, said arrangement comprising:

a controller having a reference potential input and a control input, said controller controlling the speed control of the motor; and

a plurality of switches;



wherein, through selective operation of said switches, the controller can be rendered operative for a first direction of rotation of the motor and the controller can be rendered inoperative for a second direction of rotation of the motor.

5,910,718

MOTOR CONTROL APPARATUS

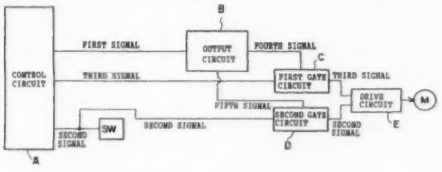
Yoshiharu Kawarazaki; Yasushi Nishibe, and Hitoshi Iwata, all of Aichi-ken, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan

Filed Aug. 25, 1997, Appl. No. 917,219

Claims priority, application Japan, Aug. 30, 1996, 8-231045

Int. Cl.[6] **H02K** *17/34;* **B60K** *20/00*

U.S. Cl. 318—447 **20 Claims**



1. A motor control apparatus comprising:

a control circuit A which outputs a first signal at each time a predetermined period of time passes in a case in which said control circuit A is in a normal state and stops output of the first signal at each time the predetermined period of time passes and outputs a third signal for controlling a motor on the basis of a second signal at a time when a switch is operated in a case in which said control circuit A is an abnormal state;

an output circuit B which outputs a fourth signal in a case in which said first signal is output at each time the predetermined period of time passes and outputs a fifth signal made by reversing said fourth signal in a case in which said first signal is not output at each time the predetermined period of time passes;

a first gate circuit C for passing said third signal in a case in which said fourth signal is output from said output circuit B;

a second gate circuit D for passing said second signal in a case in which said fifth signal is output from said output circuit B; and

a drive circuit E for driving said motor M by one of the third signal passing through said first gate circuit C and the second signal passing through said second gate circuit D.

5,910,719

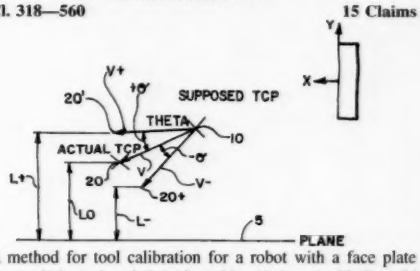
TOOL CENTER POINT CALIBRATION FOR SPOT WELDING GUNS

Henry F. Thorne, Pittsburgh, Pa., assignor to Cycle Time Corporation, Pittsburgh, Pa.

Filed Sep. 17, 1996, Appl. No. 718,628

Int. Cl.[6] **G05B** *11/01*

U.S. Cl. 318—560 **15 Claims**



1. A method for tool calibration for a robot with a face plate having a tool tip and tool tip axis, said tool tip movable by said robot within a robot envelope, said method comprising the steps of:

a) providing a calibration means within the robot envelope, wherein said calibration means includes a calibrating member positioned along a calibrating plane;

b) positioning said tool tip to an initial position within said calibrating plane;

c) obtaining values of said robot face plate with said tool tip positioned within said calibrating plane;

d) rotating said tool tip about an estimated tool center point in a first direction to at least a second position and positioning said tool tip within said calibrating plane;

e) obtaining values of said robot face plate with said tool tip within said calibrating plane following said rotation to said second position; and

f) calculating a tool center point based upon said obtained values.

5,910,720

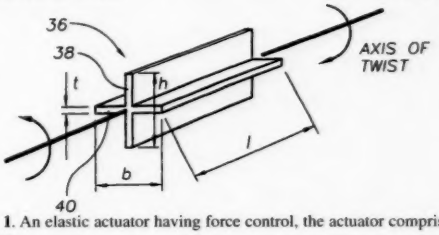
CROSS-SHAPED TORSIONAL SPRING

Matthew M. Williamson, Boston, and Gill A. Pratt, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of application No. 08/496,419, Jun. 29, 1995, Pat. No. 5,650,704. This application Jul. 18, 1997, Appl. No. 897,091.

Int. Cl.[6] **B25J** *17/00;* **H02K** *7/10*

U.S. Cl. 318—623 **15 Claims**



1. An elastic actuator having force control, the actuator comprising:

a motor;

a motor drive transmission connected at an output of the motor;

at least one torsional spring connected in series with the motor drive transmission, the at least one torsional spring positioned to fully support along either direction of an actuation axis, a load connected at least one output of the actuator, as the load is actuated along either direction the actuation axis, the torsional spring comprising a flexible structure having at least three flat segments, each segment connected integrally with and extending radially from a central section, and each seg-

ment extending axially along the central section from a distal end of the central section to a proximal end of the central section;

a single force transducer positioned at a point between a mount for the motor and at least one output of the actuator, the force transducer generating a force signal indicating force applied by the torsional spring to at least one output of the actuator; and

an active feedback force controller connected between the torsional spring and the motor for controlling the motor, based on the force signal, to twist the torsional spring an amount that produces a desired actuator output force, the output force being substantially independent of load motion.

5,910,721

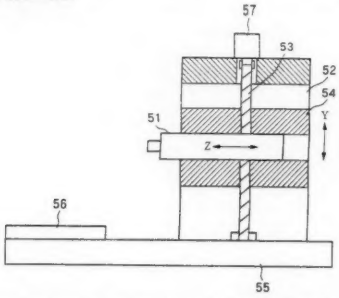
POSITION CONTROL SYSTEM AND POSITION CONTROL METHOD

Tomoo Hayashi, Gotenba; Masaru Suzuki, Mishima, and Masahiro Akiyama, Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1997, Appl. No. 915,927

Int. Cl.[6] B64C *17/06*

U.S. Cl. 318—649 **6 Claims**



1. A position control system for positioning a second member of a machine at a first vertical target position and a second horizontal target position, said machine having a first member elevatable in a vertical direction by an elevating means, said second member moveable in a vertical direction by said elevating means and moveable in a horizontal direction with respect to said first member by a horizontal moving means, said position control system comprising:

a first position detector which detects the position of said first member;

a first controller which receives first position data from said first position detector as input, controls said elevating means, and positions said first member at said first target position;

a second position detector which detects the position of said second member;

a second controller which receives second position data from said second position detector as input, controls said horizontal moving means, and positions said second member at said second target position; and

a position corrector which corrects said first target position of said first controller by calculating the position correction of the front end of said second member based on the position of said first member and the position of said second member wherein said position correction in said position corrector is calculated by measuring the positional deviation in advance and interpolating the position correction based on the positional deviation.

5,910,722

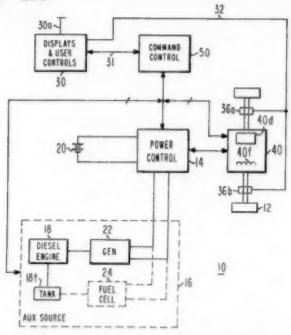
HYBRID ELECTRIC VEHICLE WITH REDUCED AUXILIARY POWER TO BATTERIES DURING REGENERATIVE BRAKING

Arthur Paull Lyons, Maine, and Timothy Michael Grewe, Endicott, both of N.Y., assignors to Lockheed Martin Corp., Johnson City, N.Y.

Provisional application No. 60/066,736, Nov. 21, 1997. This application Mar. 20, 1998, Appl. No. 44,669.

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—104 **5 Claims**



1. A method for operating a hybrid electric vehicle which derives at least some of its tractive effort from electric batteries, comprising the steps of:

providing energy from a traction battery to a traction motor/generator in at least one operating mode of said hybrid electric vehicle;

from time to time, dynamic braking said vehicle using said motor/generator, and returning to said batteries at least a portion of the electrical energy made available by said dynamic braking;

during those intervals in which said dynamic braking is not performed, charging said batteries from an auxiliary source of electrical power separate from said motor/generator, said charging being in an amount suitable for normal operation of said vehicle; and

during those intervals in which dynamic braking is being performed, charging said batteries from said auxiliary source of electrical power, at a rate reduced from said amount.

5,910,723

SYSTEM FOR MONITORING THE CHARGING OF A MODULAR SET OF ELECTROCHEMICAL CELLS CONNECTED IN SERIES AND A CORRESPONDING CELL MEASUREMENT MODULE

Michel Perelle, Parcay-Meslay, France, assignor to SAFT, Romainville, France

Filed May 20, 1997, Appl. No. 859,274

Claims priority, application France, May 21, 1996, 96 06 273

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—119 **12 Claims**

1. A charge controlling system for a modular set comprising a plurality of electrochemical cells connected in series via their respective power supply terminals, said system comprising:

(1) a central control unit;

(2) for each cell, an individual interface provided with a measurement module which comprises:

(A) a measuring means for measuring voltage between the power supply terminals of the cells;

(B) a signal delivery means for delivering a signal that is an image of the measured voltage to the central control unit via a common measurement transducer and under the control of said central control unit,

(C) a precision measurement circuit having a multiplying effect, so that the interface delivers a largely amplified

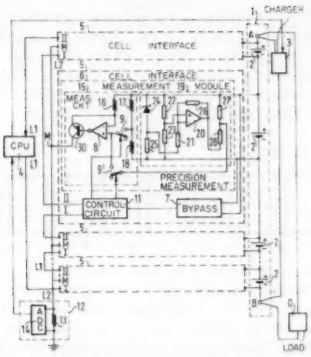


image signal when the measured voltage corresponds at least approximately to a reference value defined for the measurement circuit and optionally modifiable, said circuit delivering to the central control unit via the common measurement transducer a signal which is an accurate image of the voltage present across the power supply terminals of each cell when the measured voltage is near the reference value.

5,910,724

DIGITALLY CONTROLLED SWITCH MODE POWER SUPPLY FOR CHARGING RECHARGEABLE BATTERIES

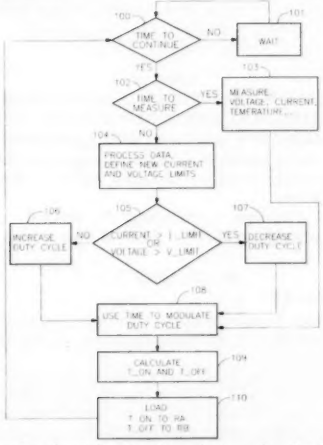
Jesper Michelsen, Aldershvilevej 10, Lyngby, Denmark, DK-2800; Kim A. Andersen, Blalersvej 62, Niva, Denmark, DK-2990; Kim Rasmussen, Sogardsvej 8, Ballerup, Denmark, DK-2750, and Lars M Andersen, Baltorpvej 112, 2., tv., Ballerup, Denmark, DK-2750

PCT No. PCT/DK96/00432, § 371 Date Oct. 28, 1997, § 102(e) Date Oct. 28, 1997

PCT Filed Oct. 10, 1996, Appl. No. 860,610

Int. Cl.[6] H01M *10/44;10/46*

U.S. Cl. 320—141 **29 Claims**



1. A charging circuit for charging a battery, the circuit comprising:

a. a measurement circuit that determines a parametric battery value while the battery is coupled to the charging circuit; and

b. a control circuit that provides a control signal, the control signal comprising a sequence of consecutive pulses, each pulse comprising a respective duty cycle selected from a set of predetermined duty cycles, the set having a duty cycle resolution, wherein the control circuit selects a plurality of duty cycles for the sequence from the set in response to the battery value; and

c. a supply circuit that receives the control signal and provides a power signal for charging the battery, the power signal having a magnitude and a resolution, the magnitude being responsive to an average of the respective duty cycles, thereby power provided for battery charging is controlled with a power signal resolution of greater precision than the duty cycle resolution.

5,910,725

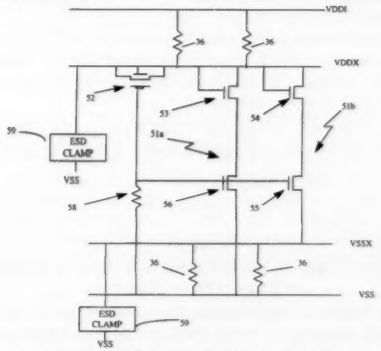
INTEGRATED CIRCUIT OUTPUT POWER SUPPLY TRANSIENT VOLTAGE PROTECTION CIRCUIT

William B. Gist, Chelmsford, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 27, 1997, Appl. No. 833,013

Int. Cl.[6] G05F *3/16;* **H02M** *7/10;* **H02H** *3/22*

U.S. Cl. 323—313 **23 Claims**



1. A circuit for limiting voltage transient excursions on a power supply node, the circuit comprising:

a first field effect transistor disposed to provide a capacitance and having source and drain electrodes coupled to said power supply node path and having a gate electrode;

first and second clamp transistors each of said clamp transistors having a source electrode, with the source of the first one of the clamp transistors coupled to an internal supply return line and the source of the second coupled to an external supply return line, and drain electrodes of each coupled to an external supply node; and

a resistance coupled between the gate electrode of said first transistor and the internal supply return node and to gate electrodes of the clamp transistors.

5,910,726

REFERENCE CIRCUIT AND METHOD

Vladimir Koifman, Rishon Le Zion, and Yachin Afek, Kfar Saba, both of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 15, 1997, Appl. No. 911,239

Int. Cl.[6] G05F *3/20*

U.S. Cl. 323—315 **21 Claims**

1. A reference circuit comprising:

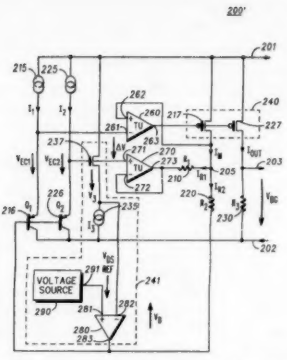
a first transistor with a first current I_1 and a first current density J_1, providing a first base-emitter voltage $|V_{BE\ 1}|$;

a second transistor with a second current I_2 and a second current density J_2, providing a second base-emitter voltage $|V_{BE\ 2}|$;

a first voltage transfer unit coupled to said first transistor;

a second voltage transfer unit coupled to said second transistor;

a first resistor having value R_1 coupled to said first transistor by said first voltage transfer unit and to said second transistor by



said second voltage transfer unit so that a third current $I_{R1}=(|V_{BE\ 1}|-|V_{BE\ 2}|)/R_1$ flows through said first resistor without substantially being derived from said first current I_1 or from said second current I_2; and

a second resistor having value R_2 coupled to said first transistor by said first voltage transfer unit so that a fourth current I_{R2} flows through said second resistor without substantially being derived from said first current I_1,

in said reference circuit, said third current I_{R1} and said fourth current I_{R2} being added and provided as reference current I_M.

5,910,727

ELECTRICAL INSPECTING APPARATUS WITH VENTILATION SYSTEM

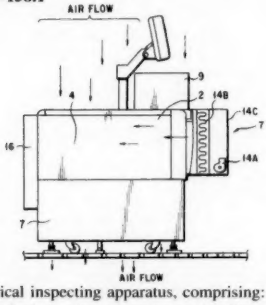
Kaoru Fujihara, and Motohiro Kuji, both of Yamanashi-ken, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Nov. 20, 1996, Appl. No. 754,767

Claims priority, application Japan, Nov. 30, 1995, 7-338230; Nov. 30, 1995, 7-338231

Int. Cl.[6] G01R *31/26*

U.S. Cl. 324—158.1 **15 Claims**



1. An electrical inspecting apparatus, comprising:

an apparatus body having a housing section for housing at least one semiconductor wafer to be inspected, an inspecting section provided with inspecting means for applying an electrical inspection to said object, and a transfer section provided with a transfer mechanism for transferring the wafer between said housing section and said inspecting section;

air-blowing means mounted on said apparatus body for blowing air in a lateral direction into at least one of the housing section, inspecting section and transfer section to prevent particles from adhering to said wafer; and

exhaust means mounted on the apparatus body for discharging the air flowing through at least one of said sections to the outside of the apparatus body.

5,910,728

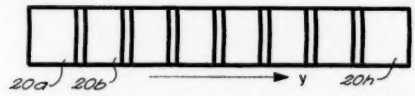
SIMULTANEOUS ACQUISITION OF SPATIAL HARMONICS (SMASH): ULTRA-FAST IMAGING WITH RADIOFREQUENCY COIL ARRAYS

Daniel Kevin Sodickson, Cambridge, Mass., assignor to Beth Israel Deaconess Medical Center, Boston, Mass.

Filed Nov. 12, 1996, Appl. No. 746,358

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—309 **26 Claims**



1. A method of magnetic resonance imaging of a continuous region of a body by conditioning nuclear spins and measuring RF signals indicative of the conditioned spins, wherein the method includes performing multiple steps of spin conditioning and of collecting of RF measurement signal responses from the region, establishing an ordered data set of collected RF signals, and performing a spatial transformation of the ordered data set to produce a magnetic resonance image of said region, wherein the method includes the steps of

1) for a spin conditioning step

i) receiving an RF measurement signal response simultaneously in each of plural RF receiving coils which each have a different spatial sensitivity, thereby acquiring a plurality of response signals

ii) forming at least two distinct combinations of said plurality of response signals, including a first combination signal and one or more remaining combination signals

iii) applying said first combination signal to an entry of said ordered data set that corresponds to said spin conditioning step, and applying the remaining combination signals to fill further entries of said ordered data set which are offset from said entry that corresponds to the spin conditioning step,

2) performing additional spin conditioning steps and repeating steps i)–iii) for each additional spin conditioning step to thereby fill said ordered data set while reducing spin conditioning steps performed, and

3) performing a spatial transformation of the filled and ordered data set into a magnetic resonance image of said continuous region thereby imaging said continuous region with reduced data acquisition time.

5,910,729

VARIABLE WAVE IMPEDANCE GENERATOR FOR TESTING ELECTRIC AND MAGNETIC FIELD CALIBRATION OF ELECTRONIC EQUIPMENT

Jae-Hoon Yun, Daejeon, Rep. of Korea, assignor to Electronics and Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

Filed Dec. 7, 1995, Appl. No. 568,830

Claims priority, application Rep. of Korea, Dec. 7, 1994, 94-33099

Int. Cl.[6] G01R *27/26*

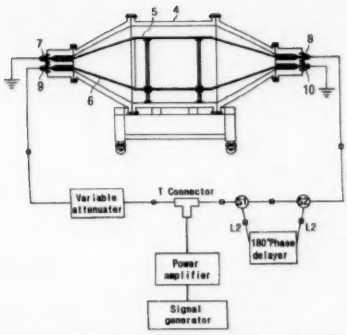
U.S. Cl. 324—627 **7 Claims**

1. A variable impedance wave generator for testing electric and magnetic field intensity calibration of electric and electronic equipment, comprising:

a measuring testing matter area including a first inner conductor and a second inner conductor having upper and lower symmetry with each other to perform various tests and calibrations regardless of the outer electronic wave environment;

a first coaxial connector and a second coaxial connector, the first coaxial connector having a first left-end N-type connector and a second left-end N-type connector, the second coaxial connector having a first right-end N-type connector and a second right-end N-type connector, wherein the connectors supply voltage to said inner conductors;

two tapered areas connecting the first and second coaxial connectors to said measuring testing matter area; and



a variable impedance providing means for providing variable wave impedance into the measuring testing matter area, which includes:

a signal generator for generating a signal;

a power amplifier for amplifying the signal;

a T-connector for dividing the amplified signal in half and for transmitting the divided signal to a first side and a second side of the T-connector;

a variable attenuator for controlling a signal received from the first side of the T-connector and for transmitting the controlled signal to one of two coaxial connectors;

a phase delayer for shifting the phase of a signal received from the second side of the T-connector in order to generate a high impedance out of phase wave in said measuring testing matter area, and

two switching means for switching a line between the second side of the T-connector and the second coaxial connector either directly or through the phase delayer.

5,910,730

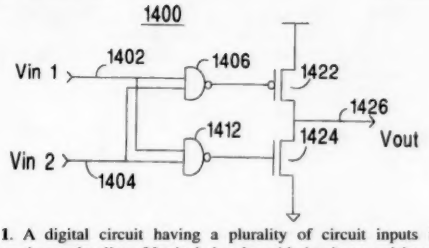
DIGITAL CIRCUIT NOISE MARGIN IMPROVEMENT

Leon Jacob Sigal, Monsey, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1996, Appl. No. 764,951

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—24 **24 Claims**



1. A digital circuit having a plurality of circuit inputs for accepting a plurality of logical signals, said circuit comprising:

a first logic gate forming a multi-input logic function and having a low input threshold, a first gate output, and a plurality of first gate inputs coupled to said circuit inputs;

a second logic gate forming the multi-input logic function, and having a high input threshold, a second gate output, and a plurality of second gate inputs coupled to said circuit inputs, said first and second logic gates being schematically identical and each having a delay of a single gate; and

a driver having a first driver input, a second driver input and a driver output, said first driver input being directly coupled to said first gate output, said second driver input being directly coupled to said second gate output.

5,910,731

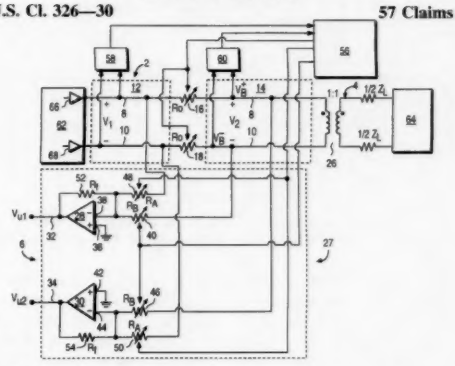
FRONT END INTERFACE CIRCUIT AND METHOD OF TUNING THE SAME

Christopher Polczynski, Petaluma, Calif., assignor to Alcatel USA Sourcing, L.P., Plano, Tex.

Filed Nov. 12, 1997, Appl. No. 967,954

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—30 **57 Claims**



1. A circuit, comprising:

(a) an input downstream transmission line including a first portion and a second portion, the input downstream transmission line adapted to convey a downstream signal;

(b) an output downstream transmission line coupled to the input downstream transmission line, the output downstream transmission line adapted to convey the downstream signal received from the input downstream transmission line and an upstream signal in a direction opposite that of the downstream signal;

(c) a plurality of variable serial resistors connected between the first and second portions of the input downstream transmission line;

(d) an upstream signal directing circuit coupled to the input downstream transmission line, the upstream signal directing circuit including a plurality of variable input resistors; and

(e) a processor connected to adjust the variable serial resistors and the variable input resistors.

5,910,732

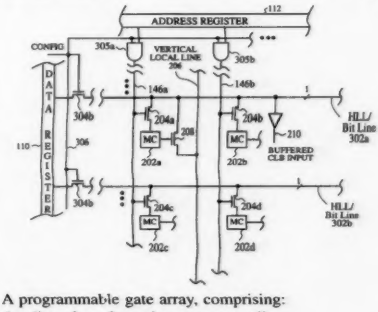
PROGRAMMABLE GATE ARRAY HAVING SHARED SIGNAL LINES FOR INTERCONNECT AND CONFIGURATION

Stephen M. Trimberger, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Mar. 12, 1997, Appl. No. 816,179

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—38 **40 Claims**



1. A programmable gate array, comprising:

a plurality of configuration memory cells;

a plurality of configurable logic blocks, each coupled to predetermined ones of the configuration memory cells which configure logic functions to be performed by the logic blocks;

a first plurality of signal lines, each coupled to predetermined ones of the configuration memory cells for transmission of configuration data to the configuration memory cells and interconnecting predetermined ones of the logic blocks for transmission of signals between the logic blocks;

a data register coupled to the first plurality of signal lines for storing configuration data to be loaded into the configuration memory cells; and

an address register coupled to the configuration memory cells for addressing configuration memory cells to be loaded with the configuration data.

5,910,733

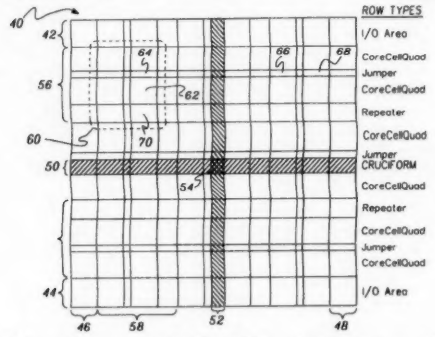
METHOD AND SYSTEM FOR LAYOUT AND SCHEMATIC GENERATION FOR HETEROGENEOUS ARRAYS

Allan Robert Bertolet, Williston; Kim P.N. Clinton, Essex Junction; Scott Whitney Gould, S. Burlington; Frank Ray Keyser III, Colchester; Timothy Shawn Reny, Underhill Center, and Terrance John Zittritsch, Williston, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of application No. 08/570,850, Dec. 12, 1995, Pat. No. 5,734,582. This application Nov. 12, 1997, Appl. No. 968,543.

Int. Cl.[6] H03K *19/177;7/38*

U.S. Cl. 326—41 **9 Claims**



1. An architecture for a family of differently sized programmable arrays, each member of the family having a plurality of logic cells and support circuitry therein, the logic cells being arranged in four sections, the support circuitry being generally distributed throughout a cruciform-shaped region generally centered in the array which defines the four sections of logic cells therein, such that the length of the arms of the cruciform and the sizes of the sections can be together varied to produce the differently sized members of the family of programmable arrays.

5,910,734

VOLTAGE LEVEL TRANSLATOR

Troy Manning, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 20, 1997, Appl. No. 803,343

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—81 **6 Claims**

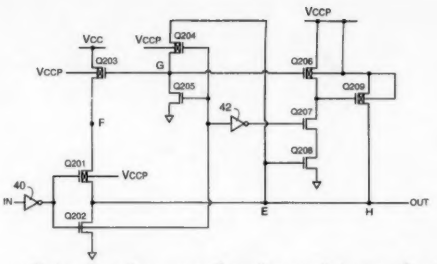
1. *A translating device, comprising:*

an output node;

a first n-channel/p-channel transistor pair, comprising:

a first pair of intercoupled drains defining a first node coupled to said output node,

a first pair of intercoupled gates configured to receive an input signal,



a first n-channel source configured to couple to ground, and

a first p-channel source;

a second n-channel/p-channel transistor pair, comprising:

a second pair of intercoupled drains defining a second node,

a second pair of intercoupled gates configured to receive said input signal,

a second n-channel source configured to couple to ground, and

a second p-channel source coupled to said first node;

a third n-channel/p-channel transistor pair, comprising:

a third pair of intercoupled drains defining a third node,

a third p-channel gate coupled to said second node,

a third n-channel gate configured to receive said input signal,

a third n-channel source, and

a third p-channel source configured to couple to a first voltage source;

a first semiconductor device comprising:

a first device source configured to couple to a second voltage source that is lower in voltage than said first voltage source,

a first device gate coupled to said second node, and

a first device drain coupled to said first p-channel source;

a second semiconductor device, comprising:

a second device source configured to couple to said first voltage source,

a second device gate coupled to said third node, and

a second device drain coupled to said output node; and

a third semiconductor device, comprising:

a third device source configured to couple to ground,

a third device gate configured to couple to said first node, and

a third device drain coupled to said third n-channel source.

5,910,735

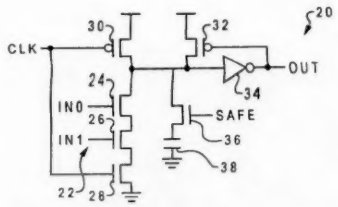
METHOD AND APPARATUS FOR SAFE MODE IN DYNAMIC LOGIC USING DRAM CELL

David H. Allen, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1997, Appl. No. 861,586

Int. Cl.[6] H03K *19/096*

U.S. Cl. 326—93 **19 Claims**



1. A dynamic logic circuit comprising:

a logic network having at least one input;

a precharge device having a storage node connected to said logic network; and

means for varying a capacitance of said storage node to provide a normal mode of operation of the dynamic logic circuit, and

a safe mode of operation of the dynamic logic circuit for which the circuit is less susceptible to noise than with said normal mode of operation.

5,910,736

DIFFERENTIAL-TYPE DATA TRANSMITTER

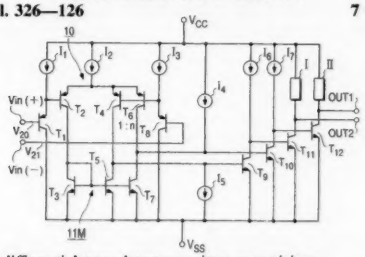
Junichi Nagata, and Junji Hayakawa, both of Okazaki, Japan, assignors to Denso Corporation, Kariya, Japan

Filed Oct. 17, 1996, Appl. No. 733,636

Claims priority, application Japan, Oct. 17, 1995, 7-268458

Int. Cl.[6] H03K *19/086;* **H03F** *3/45*

U.S. Cl. 326—126 **7 Claims**



7. A differential-type data transmitter comprising:

a differential amplifier responding to a first input signal and a second input signal;

first means connected to the differential amplifier for generating a first output signal in response to the first and second input signals; and

second means connected to the differential amplifier for generating a second output signal in response to the first and second input signals;

wherein a logic state of the first output signal and a logic state of the second output signal are equal to each other and depend on a difference between the first and second input signals when the first and second input signals are in a given voltage range; and

wherein the logic state of the first output signal and the logic state of the second output signal are different from each other when the first and second input signals are outside the given voltage range.

5,910,737

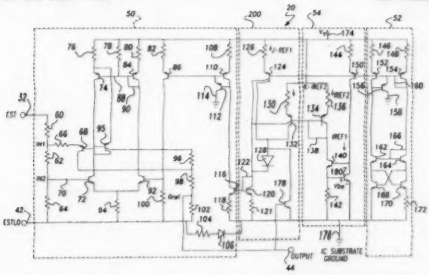
INPUT BUFFER CIRCUIT WITH DIFFERENTIAL INPUT THRESHOLDS OPERABLE WITH HIGH COMMON MODE INPUT VOLTAGES

Scott Birk Kesler, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Jun. 30, 1997, Appl. No. 885,036

Int. Cl.[6] H03K *5/153;5/159*

U.S. Cl. 327—89 **12 Claims**



1. An electrical input buffer integrated circuit operable with inputs above and below an integrated circuit local ground, said circuit comprising:

a first input for receiving an electrical control signal;

a second input for receiving a reference voltage signal, said control signal and reference voltage signal providing a differential input;

an integrated circuit ground input for receiving a local ground;

a comparator including a differential pair of NPN type transistors having commonly connected emitters for comparing the control signal to a threshold value;

a comparator biasing resistor coupled between the commonly connected emitters of the differential pair of transistors and the second input, wherein the comparator biasing resistor receives the reference voltage signal from the second input; and

an output for producing an output signal as a function of the input differential voltage despite inputs above and below the local ground.

5,910,738

DRIVING CIRCUIT FOR DRIVING A SEMICONDUCTOR DEVICE AT HIGH SPEED AND METHOD OF OPERATING THE SAME

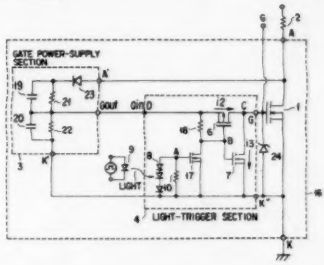
Takashi Shinohe, Yokohama; Masakazu Yamaguchi, and Kimihiro Hoshi, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 5, 1996, Appl. No. 628,515

Claims priority, application Japan, Apr. 7, 1995, 7-082120; Apr. 11, 1995, 7-085505

Int. Cl.[6] H03K *3/00*

U.S. Cl. 327—108 **15 Claims**



1. A method of driving a semiconductor device with a device drive circuit comprising a voltage-driven switching element, a voltage-lowering circuit connected between a cathode and an anode of said voltage-driven switching element to have any voltage applied between the cathode and the anode of the voltage-driven switching element also applied to the voltage-lowering circuit, an enhancement-type MOSFET charging switching element for charging a gate of said voltage-driven switching element, a depletion-type MOSFET discharging switching element for discharging the gate of said voltage-driven switching element, and a photovoltaic element for driving said charging switching element and said discharging switching element, said method comprising the steps of:

applying a voltage between the cathode and the anode of said voltage-driven switching element;

generating a stabilized intermediate voltage from said voltage-lowering circuit receiving said applied voltage between the cathode and the anode of the voltage-driven switching element; and

driving said charging and discharging switching elements to provide said voltage-driven switching element with said stabilized intermediate voltage using a photovoltaic power generated by said photovoltaic element.

5,910,739

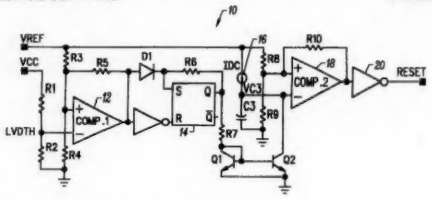
POWER-UP/INTERRUPT DELAY TIMER

Silvo Stanojevic, Milpitas, Calif., assignor to Exar Corporation, Fremont, Calif.

Continuation of application No. 08/633,145, Apr. 16, 1996, Pat. No. 5,818,271. This application Apr. 23, 1998, Appl. No. 65,390.

Int. Cl.[6] H03K *17/22*

U.S. Cl. 327—143 **4 Claims**



1. A reset circuit comprising:

a first comparator having inputs coupled to a power supply voltage and a voltage reference, said voltage reference being provided by a separate voltage regulator from said power supply voltage;

a second comparator having a first input coupled to said voltage reference, and an output for generating a reset signal, said reset signal being generated a power interrupt delay period after said power supply voltage falls below said voltage reference, such that no power-on delay is initiated for power interrupts that are shorter than said power interrupt delay period;

a capacitor coupled to a second input of said second comparator;

a charging circuit coupled between said voltage reference and said capacitor; and

a discharging circuit, coupled between an output of said first comparator and said capacitor, configured to discharge said capacitor in response to said supply voltage falling below said voltage reference.

5,910,740

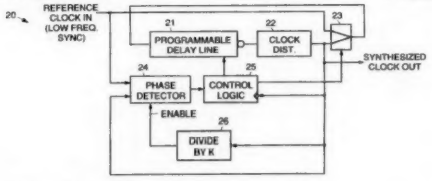
PHASE LOCKED LOOP HAVING MEMORY

George D. Underwood, Inglewood, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 18, 1997, Appl. No. 878,323

Int. Cl.[6] H03L *7/06*

U.S. Cl. 327—149 **6 Claims**



1. A phase locked loop comprising:

a reference clock input for receiving a reference clock input signal;

a multiplexer having an input coupled to receive the reference clock input signal;

a dynamically programmable delay line having an input coupled to receive an output signal from the multiplexer for delaying the output signal from the multiplexer by a programmed amount;

a clock distribution circuit having an input coupled to an output of the dynamically programmable delay line and having an output coupled to a second input of the multiplexer and wherein the clock distribution circuit provides a synthesized clock output signal from the phase locked loop;

a phase detector having inputs coupled to receive the reference clock signal and the synthesized clock output signal, for generating a signal indicative of whether the frequency of the synthesized clock output signal is leading or lagging the frequency of the reference clock input signal;

control logic coupled between the phase detector and a select input of the programmable delay line, for controlling the programmable delay line such that if the frequency of the synthesized clock output signal lags the frequency of the reference clock input signal, the control logic causes the period of the synthesized clock output signal to be lengthened, and if the frequency of the synthesized clock output signal leads the frequency of the reference clock input signal, the control logic causes the period of the synthesized clock output signal to be shortened, and coupled to a select input of the multiplexer for controlling the multiplexer such that if the reference clock edge occurs, it is substituted in place of the synthesized clock edge; and

a divide by K circuit having an input coupled to receive the synthesized clock output signal for generating an enable signal that enables the phase detector.

5,910,741

PLL CIRCUIT WITH NON-VOLATILE MEMORY

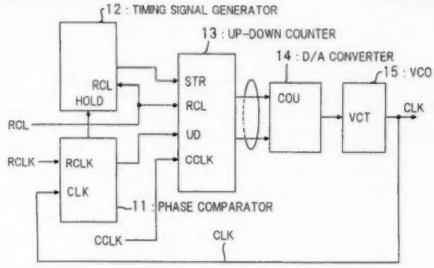
Hiroyuki Watanabe, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 27, 1997, Appl. No. 917,768

Claims priority, application Japan, Aug. 29, 1996, 8-228915

Int. Cl.[6] H03L *7/183;7/089*

U.S. Cl. 327—150 **12 Claims**



1. A PLL (Phase Locked Loop) circuit comprising:

a phase comparator for generating an up-down signal which is turned to logic LOW when a phase of an output clock signal is advanced to a phase of a reference clock signal and turned to logic HIGH when said phase of said output clock signal is delayed to said phase of said reference clock signal, and a phase lock signal indicating synchronization of said output clock signal and said reference clock signal;

a timing signal generator for generating a timing signal when said phase lock signal is generated for a certain period after said timing signal generator is initialized with a reset signal;

an up-down counter, supplied with said reset signal, said up-down signal, said timing signal and a count clock, for generating a count value which is incremented when said up-down signal is at said logic HIGH and decremented when said up-down signal is at said logic LOW according to each pulse of said count clock, memorizing said count value in a nonvolatile memory cell in accordance with said timing signal, and outputting said count value memorized in the nonvolatile memory cell when initialized by said reset signal;

a D/A (Digital to Analog) converter for outputting a control voltage in proportion to said count value; and

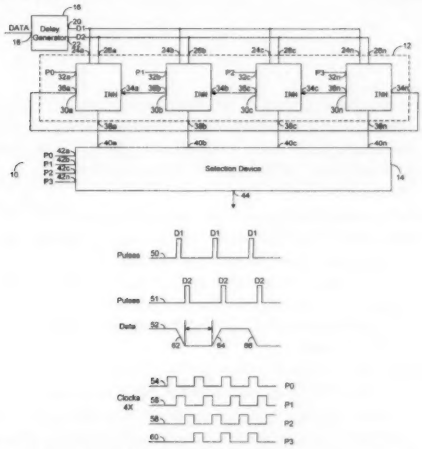
a VCO (Voltage Controlled Oscillator) for providing said output clock signal according to said control voltage.

5,910,742

CIRCUIT AND METHOD FOR DATA RECOVERY

Warren S. Synder, Snohomish, and Timothy J. Williams, Bellevue, both of Wash., assignors to Cypress Semiconductor Corp., San Jose, Calif.

Filed Jun. 16, 1997, Appl. No. 877,683
Int. Cl.[6] H04L *7/02*
U.S. Cl. 327—165 **14 Claims**



1. A circuit comprising:

a pulse generator configured to generate at least two synchronizing signals, each synchronizing signal having pulses generated at each transition of a data signal;

a clock generator circuit configured to generate a plurality of clock signals; and

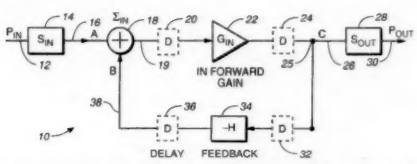
a logic circuit configured to: (i) select one of said clock signals in response to said pulses of said synchronizing signals and (ii) synchronize said data signal with said selected clock signal.

5,910,743

HIGH EFFICIENCY PULSE WIDTH MODULATOR

Brian L. Baskin, Cupertino, Calif., assignor to Power System Management, Inc., Cupertino, Calif.

Filed Jul. 3, 1997, Appl. No. 887,760
Int. Cl.[6] H03K *3/017*
U.S. Cl. 327—172 **16 Claims**



1. An apparatus responsive to an input signal having an input frequency within an input bandwidth for optimum power management of a physical property, said apparatus comprising:

an input forward gain element configured to generate an output signal;

a feedback element connected to said input forward gain element, wherein said feedback element is configured to attenuate and invert said output signal and configured to generate an attenuated and inverted output signal;

a delay element connected to said feedback element, wherein said delay element is configured to delay said attenuated, inverted output signal and configured to output an attenuated, *inverted and delayed output signal; said attenuated, inverted* and delayed output signal being a feedback signal; and

an input summing junction element connected to said delay element and connected to said input forward gain element, wherein said input summing junction element is configured to sum said input signal and said feedback signal and is configured to output a summed signal to an input of said input forward gain element, wherein said summed signal is an input error signal having the input frequency;

wherein said input error signal is used by said input forward gain element to generate said output signal having the input frequency;

wherein said feedback element, said input forward gain element and said input summing junction element comprise a delay loop circuit;

and wherein said delay loop circuit is configured to generate a delay loop output signal comprising a first delay loop component having a delay loop frequency outside the input bandwidth of said input signal and a second delay loop component having the input frequency;

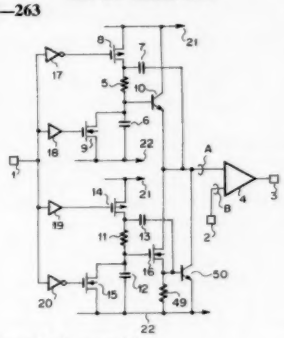
and wherein said first delay loop component having the delay loop frequency is used to manage said physical property at the rate of the delay loop frequency.

5,910,744

VARIABLE DELAYING CIRCUIT HAVING A NEARLY LINEAR DELAY CHARACTERISTIC

Seiichi Watarai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 8, 1997, Appl. No. 924,933
Claims priority, application Japan, Sep. 18, 1996, 8-246268
Int. Cl.[6] H03K *5/13*
U.S. Cl. 327—263 **13 Claims**



1. A delaying circuit, comprising:

a first power supply line;

a second power supply line;

an input terminal;

an output terminal;

a resistor;

a first capacitor connected between a first terminal of said resistor and said output terminal;

a second capacitor connected between said second power supply line and a second terminal of said resistor;

a first transistor having a main current path and a control electrode, the main current path being connected between said first power supply line and said output terminal, the control electrode being connected to the second terminal of said resistor;

a first switch connected between said first power supply line and the first terminal of said resistor, said first switch being turned on when the signal level of said input terminal is a first logic level, said first switch being turned off when the signal level of said input terminal is a second logic level;

a second switch connected in parallel with said second capacitor, said second switch being turned on when the signal level of said input terminal is the first logic level, said second switch being turned off when the signal level of the said input terminal is the second logic level; and

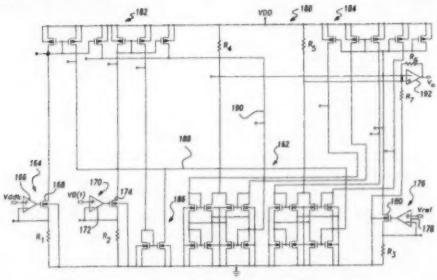
circuit means, connected between said output terminal and said second power supply line, for forming an electric path between said output terminal and said second power supply line when the signal level of said input terminal is the first logic level and for disconnecting said output terminal from said second power supply line when the signal level of said input terminal is the second logic level.

5,910,745

PROCESS PARAMETERS AND TEMPERATURE INSENSITIVE ANALOG DIVIDER/MULTIPLIER/ RATIOMETRY CIRCUIT

Seyed Ramezan Zarabadi, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed May 1, 1997, Appl. No. 846,455
Int. Cl.[6] H03K *17/92*
U.S. Cl. 327—356 **21 Claims**



1. A multiplier circuit for providing a ratio/product of two or more inputs, said circuit comprising:

a first field effect transistor (FET) (**18**) including a gate terminal, a source terminal and a drain terminal, said first FET acting as a first input FET wherein a first input signal is applied to the gate terminal of the first FET;

a second FET (**22**) including a gate terminal, a source terminal and a drain terminal, said second FET acting as a second input FET wherein a second input signal is applied to the gate terminal of the second FET; and

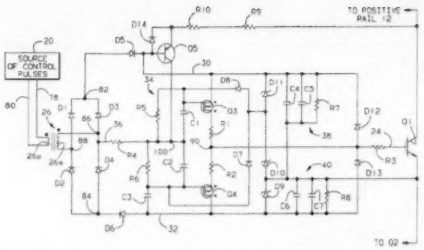
a plurality of other FETs each including a gate terminal, a source terminal and a drain terminal, wherein the first FET, the second FET and the plurality of other FETs are all electrically connected in a manner effective to process the first input signal and the second input signal and provide a first multiplier signal and a second multiplier signal that are independent of process parameter and temperature variations on the multiplier circuit, said multiplier circuit being used in association with a vehicle yaw sensor system.

5,910,746

GATE DRIVE FOR A POWER SWITCHING DEVICE

Graham Thomas Fordyce, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 26, 1993, Appl. No. 37,767
Int. Cl.[6] H03K *17/687*
U.S. Cl. 327—379 **14 Claims**



1. A drive circuit for a power switching device, comprising:

a transformer having a primary winding and a secondary winding across which secondary pulses of first and second polarities and first and second magnitudes are developed when input pulses of opposing polarities are provided to the primary winding;

a full-wave rectifier bridge having first and second nodes coupled to the secondary winding and third and fourth nodes;

first and second capacitors connected in series between the third and fourth nodes;

first and second controlled switches coupled between a control electrode of the power switching device and the first and second capacitors, respectively, each controlled switch having a control electrode coupled to the secondary winding of the transformer;

wherein control current is drawn from the control electrode of the power switching device through the second controlled switch to the second capacitor in response to the development of a secondary pulse of the second polarity and the second magnitude, at which point charging current is provided to the first and second capacitors from the secondary winding of the transformer; and

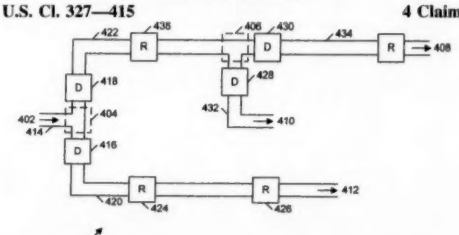
wherein the control current is provided by the first capacitor to the control electrode of the power switching device through the first controlled switch in response to the development of a secondary pulse of the first polarity and the first magnitude, the first capacitor being discharged thereby until a voltage magnitude of the first capacitor discharges below the first magnitude of the secondary pulse of the first polarity and the first magnitude, at which point charging current is provided to the first capacitor from the secondary winding of the transformer.

5,910,747

METHOD FOR OPTIMIZATION OF MULTI-LEVEL INTERCONNECT RC DELAY

Ashwin I. Matta; Larry A. Woodrum, and Rajiv Hattangadi, all of Austin, Tex., assignors to Advanced Micro Devices, Inc.

Filed Nov. 12, 1996, Appl. No. 747,394
Int. Cl.[6] H03K *17/62*
U.S. Cl. 327—415 **4 Claims**



1. A method for decreasing propagation delay of an interconnect in an integrated circuit, said interconnect having a parent interconnect which forks into two or more branches, said two or more branches including a first branch coupled to the parent interconnect at a junction, said first branch having loading effects associated therewith, said method comprising:

identifying said first branch in said integrated circuit;

isolating said loading effects of said first branch by placing a driver in said first branch; and

placing a number of repeaters, k, having an ON resistance R_o and a gate capacitance C_o, in a branchless portion of said interconnect having a resistance R_i and a capacitance C_i, said number of repeaters being determined according to the relation

$$k = \sqrt{\frac{R_i C_i}{R_o C_o}}.$$

5,910,748

POWER AMPLIFIER IN BICMOS TECHNOLOGY HAVING AN OUTPUT STAGE IN MOS TECHNOLOGY

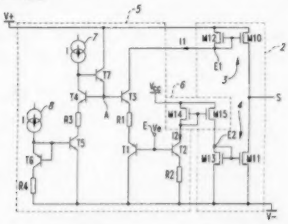
Marius Reffay, Grenoble, and Danika Chaussy, Montchaboud, both of France, assignors to STMicroelectronics, S.A., Gentilly, France

Filed Jul. 16, 1997, Appl. No. 893,248

Claims priority, application France, Jul. 16, 1996, 96 09131

Int. Cl.[6] H03K *17/60*

U.S. Cl. 327—432 **18 Claims**



1. A power amplifier having an output stage in MOS technology, including:

an upper half-output stage comprised of a first and a second P-channel MOS power transistors mounted as a current mirror;

a lower half-output stage comprised of a first and a second N-channel MOS power transistors mounted as a current mirror;

an output terminal corresponding to the common drains of the first P-channel MOS power transistor of the upper half-output stage and of the first N-channel MOS power transistor of the lower half-output stage; and

a control stage in bipolar technology for setting, according to a control voltage, two control currents of the upper half-output stage and the lower half-output stage, the control stage including:

a first PNP-type bipolar transistor setting a first current for controlling the upper half-stage;

a second NPN-type bipolar transistor setting a second current for controlling the lower half-stage; and

an input terminal for receiving the control voltage and connected to the respective bases of the first and second bipolar transistors.

5,910,749

CURRENT REFERENCE CIRCUIT WITH SUBSTANTIALLY NO TEMPERATURE DEPENDENCE

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 30, 1996, Appl. No. 740,508

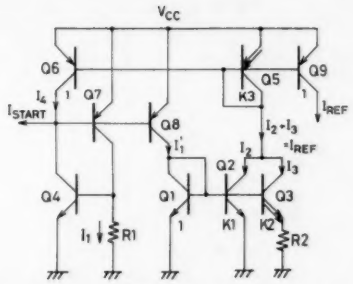
Claims priority, application Japan, Oct. 31, 1995, 7-283843

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—541 **18 Claims**

1. A current reference circuit comprising:

(a) a first transistor having an emitter or source and a base or gate, said emitter or source of said first transistor being connected to a first line kept at a first-level voltage;



(b) a resistor through which an input current flows, said base or gate of said first transistor being connected to a first end of said resistor, and a second end of said resistor being connected to said first line;

(c) a first current mirror subcircuit for generating a first current of said input current, said first mirror current having a negative temperature coefficient;

(d) a second current mirror subcircuit for generating a second mirror current of said input current, said second mirror current having a positive temperature coefficient;

(e) a driver subcircuit for driving said first and second current mirror subcircuits by said input current;

said first end of said resistor being connected to a second line kept at a second-level voltage through a circuit path within said driver subcircuit,

wherein said input current flows through said circuit path; and

said driver subcircuit connected to a collector or drain of the first transistor having an output connected to the inputs of said first and second current mirror subcircuits, respectively;

(f) a connection node for connecting an output of said first current mirror subcircuit and an output of said second current mirror subcircuit, whereby said first and second mirror currents are added thereby to generate a sum current having no temperature dependence;

(g) a third current mirror subcircuit connected to said connection node, said third current mirror subcircuit outputting an output current corresponding to said sum current as a reference current having no temperature dependence; and

(h) a fourth current mirror subcircuit connected to said connection node, wherein said fourth current mirror subcircuit supplies a driving current corresponding to said sum current to said collector or drain of said first transistor for driving said first transistor.

5,910,750

LOW POWER CONSUMPTION SWITCHING DEVICE FOR POWER SOURCE

Naofumi Harada; Satoshi Kizawa; Yuji Tadano, and Kaoru Kawata, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1998, Appl. No. 40,454

Claims priority, application Japan, Sep. 29, 1997, 9-263056

Int. Cl.[6] G05F *1/10*

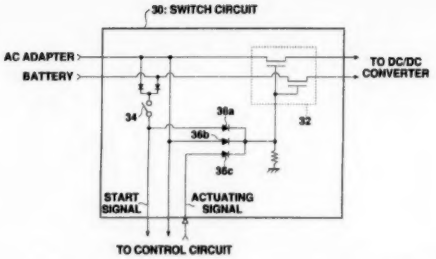
U.S. Cl. 327—544 **7 Claims**

1. A low power consumption switching device for a power source, which is disposed between a power source section and a power receiving circuit receiving power from said power source section, comprising:

a main switch element connected between said power source section and said power receiving circuit;

a start switch which is turned on at a predetermined timing for supplying an output signal from said power source section to said main switch element, to thereby set said main switch element to the conductive state; and

a system actuating circuit for supplying said main switch element with an actuating signal indicative of said power receiv-



ing circuit being in operation, to thereby set said main switch element to the conductive state, wherein

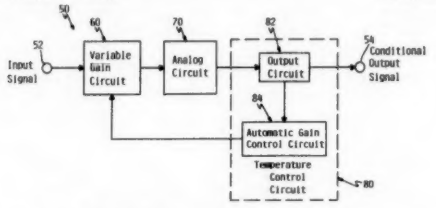
said actuating signal disappears when said power receiving circuit halts its operation, and said main switch element is brought to the non-conductive state in response to said start switch being turned off.

5,910,751

CIRCUIT ARRANGEMENT AND METHOD WITH TEMPERATURE DEPENDENT SIGNAL SWING

Gregory Scott Winn, and Raymond Alan Richetta, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1997, Appl. No. 800,608
Int. Cl.[6] H03G *5/22;* **H03F** *1/30*
U.S. Cl. 327—560 **25 Claims**



1. A circuit arrangement, comprising:

(a) a variable gain circuit coupled to receive an input signal and output therefrom an amplified input signal, the variable gain circuit having a gain that is controlled via a control signal;

(b) an analog circuit coupled to receive the amplified input signal from the variable gain circuit and output therefrom an output signal, the analog circuit having an effective linear signal range that limits the permissible signal swing of the amplified input signal, wherein the effective linear signal range of the analog circuit varies with temperature; and

(c) a temperature control circuit, responsive to temperature, and coupled to output the control signal to the variable gain circuit and thereby vary the signal swing of the amplified input signal such that the signal swing of the amplified input signal varies with variations in the effective linear signal range of the analog circuit.

5,910,752

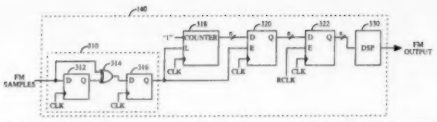
FREQUENCY DEMODULATOR WITH RESAMPLED OUTPUT

Daniel Filipovic, Solana Beach, and Saed G. Younis, San Diego, both of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Dec. 9, 1997, Appl. No. 987,307
Int. Cl.[6] H03D *3/00;* **H04B** *1/16*
U.S. Cl. 329—341 **12 Claims**

1. An FM demodulator comprising:

an analog-to-digital converter (ADC) for receiving an FM signal and producing FM samples;



a demodulator processor connected to said ADC for receiving said FM samples and producing FM output, said demodulator processor including:

edge detector, said edge detector receiving said FM samples and producing pulses;

counter, connected to said edge detector, said counter producing a measured cycle period based on said pulses from said edge detector;

first register connected to said counter, said first register producing a demodulated output based on said measured cycle period from said counter;

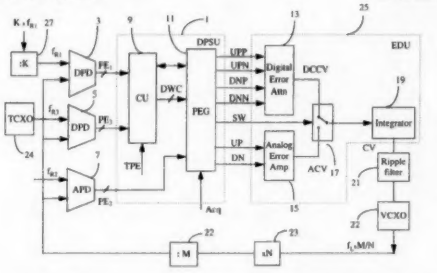
second register connected to said first register, said second register producing a resampled output based on said demodulated output from said first register.

5,910,753

DIRECT DIGITAL PHASE SYNTHESIS

Wladyslaw Bogdan, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 19, 1997, Appl. No. 933,876
Int. Cl.[6] H03L *7/08;7/087*
U.S. Cl. 331—17 **22 Claims**



1. A synchronizer for locking a local clock generated with a voltage controlled oscillator (VCXO), to a first reference signal from an incoming digital signal, comprising:

a first digital phase detector for comparing the phase of said local clock with a phase of the first reference signal and for providing a first phase error signal;

a digital phase synthesis unit for receiving said first phase error signal and a target phase error and producing a first set of control signals; and

an error driver for generating a control voltage from said first set of control signals for adjusting said VCXO to lock said synchronizer with said reference clock.

5,910,754

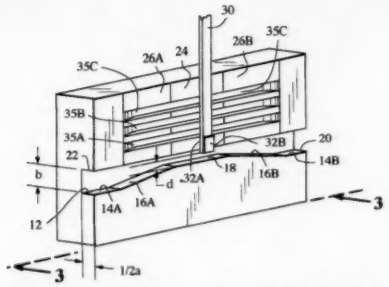
REDUCED HEIGHT WAVEGUIDE TUNER FOR IMPEDANCE MATCHING

Gary R. Simpson, Fontana; Robert L. Eisenhart, Woodland Hills; Bela B. Szendrenyi, and Richard J. Maury, both of Alta Loma, all of Calif., assignors to Maury Microwave, Inc., Ontario, Calif.

Filed May 2, 1997, Appl. No. 850,681
Int. Cl.[6] H03H *7/40;* **H01P** *5/04*
U.S. Cl. 333—17.3 **35 Claims**

1. An RF waveguide tuner for impedance matching, comprising:

a reduced height waveguide section comprising a conductive wall and having a slot formed in the wall along a waveguide



tuning area, the reduced height waveguide section having a reduced height dimension and a width dimension;

an input waveguide section adjacent a first end of said reduced height waveguide section which transitions from an input waveguide height dimension which is larger than said reduced height dimension, the input waveguide section having a width dimension equal to the width dimension of the reduced height waveguide section;

an output waveguide section adjacent a second end of said reduced height waveguide section which transitions from said reduced waveguide height dimension to said an output waveguide height dimension which is larger than the reduced height waveguide dimension, and wherein the reduced height dimension is from about 5% to about 40% smaller than the input waveguide height dimension and the output waveguide height dimension, the output waveguide section having a width dimension equal to the width dimension of the reduced height waveguide section;

a probe extendable into the waveguide through the slot;

apparatus for selectively positioning the probe at positions at variable depths within the waveguide to vary the reflection coefficient and within a tuning range of movement along the slot to vary the phase of the reflections from the probe;

wherein the reduced height waveguide provides higher cut-off frequencies for higher order modes excited in the waveguide due to discontinuities, thereby widening a bandwidth of the tuner.

5,910,755

LAMINATE CIRCUIT BOARD WITH SELECTABLE CONNECTIONS BETWEEN WIRING LAYERS

Hidehiro Mishiro; Kenichiro Tsubone; Mitsunori Abe, and Rie Takada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of application No. 08/662,959, Jun. 13, 1996, abandoned, which is a continuation of application No. 08/331,506, filed as application No. PCT/JP94/0019940228, Feb. 28, 1994, abandoned. This application Oct. 28, 1997, Appl. No. 959,711.

Claims priority, application Japan, Mar. 19, 1993, 5-060295; Jun. 14, 1993, 5-141647

Int. Cl.[6] H03H *7/075;* **H01G** *4/255*

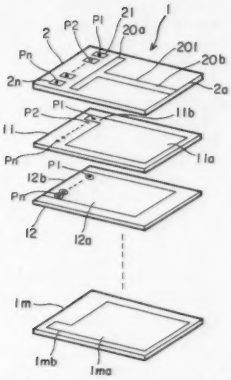
U.S. Cl. 333—24 C **5 Claims**

1. A laminate circuit board formed by laminating a plurality of wiring layers including dielectric layers and patterns formed thereon to form a single laminated structure, comprising:

a plurality of first wiring layers each having an insulation layer formed with at least a pattern of a conductive foil, said plurality of first wiring layers being laminated one upon another;

a second wiring layer used for connections to said plurality of first wiring layers laminated to a surface of one of said plurality of first wiring layers laminated one upon another;

a plurality of terminal patterns formed on said second wiring layer in a state insulated from one another;



a plurality of vias for connecting at least two of said plurality of terminal patterns to corresponding patterns formed on said plurality of first wiring layers; and

connecting means for selectively connecting said plurality of terminal patterns to each other in a plurality of combinations after said single laminated structure is formed, thereby providing a plurality of available circuit configurations in said single laminated structure depending on how said connecting means connects said plurality of terminal patterns to each other;

wherein said plurality of first wiring layers are used as wiring layers for electrodes of a laminate-type capacitor;

wherein said plurality of available circuit configurations provide a plurality of corresponding capacitance values; and

wherein said wiring layers for electrodes are formed by a plurality of independent electrode wiring layers, and a plurality of common electrode wiring layers, said independent wiring layers and said common electrode wiring layers being laminated in an alternating manner with a dielectric interposed therebetween, said plurality of independent wiring layers being connected to corresponding ones of said plurality of terminal patterns by way of said vias, said common electrode wiring layers being electrically connected to each other to be connected to one of said plurality of terminal patterns.

5,910,756

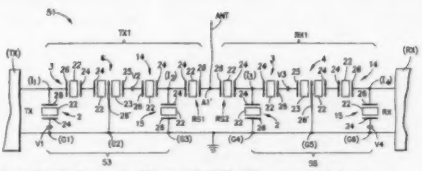
FILTERS AND DUPLEXERS UTILIZING THIN FILM STACKED CRYSTAL FILTER STRUCTURES AND THIN FILM BULK ACOUSTIC WAVE RESONATORS

Juha Ella, Salo, Finland, assignor to Nokia Mobile Phones Limited, Espoo, Finland

Filed May 21, 1997, Appl. No. 861,216

Int. Cl.[6] H03H *9/205;9/54;9/70*

U.S. Cl. 333—133 **23 Claims**



1. A Bulk Acoustic Wave (BAW) filter, comprising:

a first pair of ports;

a second pair of ports;

a first lead connected between a first and a second one of said first pair of ports;

a second lead connected between a first and a second one of said second pair of ports;

a first plurality of BAW resonators, said first plurality of BAW resonators including a first BAW resonator connected in series

in said first lead, said first plurality of BAW resonators also including a second BAW resonator connected between said first lead and said second lead;

a first Stacked Crystal Filter (SCF), said first SCF having first and second terminals connected in said first lead between said first BAW resonator and one of said first pair of ports, said first SCF also having a third terminal connected to a node in said second lead, wherein said BAW filter yields a pass band response having a center frequency fM a lower notch at a frequency X, and an upper notch at a frequency Y; and

wherein the thickness of said first BAW resonator is chosen to provide a series resonance substantially at said center frequency fM of said pass band response and a parallel resonance substantially at frequency Y and wherein the thickness of said second BAW resonator is chosen to provide a parallel resonance substantially at said center frequency fM of said pass band response and a series resonance substantially at frequency X.

5,910,757

PHASE BARRIER FOR USE IN A MULTIPHASE CIRCUIT BREAKER

William J. Broghammer; Richard W. Niccolls, both of Cedar Rapids, and Darrell P. Ophaug, Marion, all of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Mar. 25, 1998, Appl. No. 47,923
Int. Cl.[6] H01H *75/00*
U.S. Cl. 335—9 **14 Claims**

1. A circuit breaker for interrupting a flow of electrical current in a multiphase circuit path between at least one source and at least one load, comprising:

an electro-mechanical assembly having a blade carrier corresponding to each phase of the multiphase circuit path;

a crossbar connected to each blade carrier wherein, when one or more phases of the circuit path are interrupted and a disconnection of one or more of the blade carriers occurs, the crossbar effects the disconnection of all of the blade carriers; and

a phase barrier including an insulating material positioned circumferentially around the crossbar and between each blade carrier wherein the phase barrier includes a main body planar surface perpendicular to the blade carriers and wherein said insulating material further extends over the crossbar a distance from the main body planar surface between one blade carrier to an adjacent blade carrier; and

wherein molten metal particles generated during interruption of said power are encapsulated by said insulating material.

5,910,758

MINIATURE CIRCUIT BREAKER WITH SHUNT TRIP DEVICE

James G. Maloney, Industry, and Stephen A. Mrenna, Beaver, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 8, 1997, Appl. No. 986,346
Int. Cl.[6] H01H *75/10*
U.S. Cl. 335—35 **14 Claims**

1. A circuit breaker system with a shunt trip device, comprising:

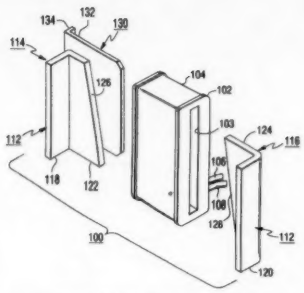
separable main contacts;

trip means interactive with said separable main contacts for opening said separable main contacts;

movable latch means interconnected with said trip means for actuating said trip means upon release;

movable armature means interactive with said movable latch means for capturing said movable latch means until said movable armature means is moved at which time said movable latch means is released;

electromagnetic means interactive with said movable armature means for moving said movable armature means when said electromagnetic means is energized, comprising;



electromagnetic toroidal coil means having a central opening;

two piece magnetic core means disposed within said central opening for being magnetized by said electromagnetic toroidal coil means for interacting with said movable armature means for moving said movable armature means;

a source of electrical power interconnected with said electromagnetic toroidal coil means upon command for magnetizing said two piece magnetic core means; and

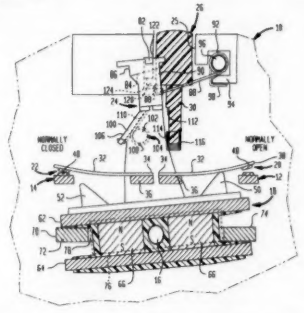
wherein said two piece magnetic core means comprises a pair of members which are end abutted at the end of a leg of each to allow assembly from both sides of said central opening.

5,910,759

CONTACT MECHANISM FOR ELECTRONIC OVERLOAD RELAYS

Christian Henry Passow, Batavia, Ill., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed May 15, 1998, Appl. No. 79,722
Int. Cl.[6] H01H *51/22*
U.S. Cl. 335—78 **10 Claims**



1. A trip mechanism for an overload relay comprising:

a housing;

a bistable armature mounted in said housing on a pivot for pivotal movement between two stable positions;

fixed contacts within said housing;

moveable contacts carried by leaf springs for movement to a closed position with said fixed contacts for one of said two stable positions and for movement to an open position relative to said fixed contacts for the other of said two stable positions, said leaf springs being positioned to be engaged by said armature;

a latch arm carried by one of said armature and said housing and having a latch surface thereon; and

a spring mounted on the other of said armature and said housing and having a latch finger for engaging said latch surface and retaining said armature in one of said two positions.

5,910,760

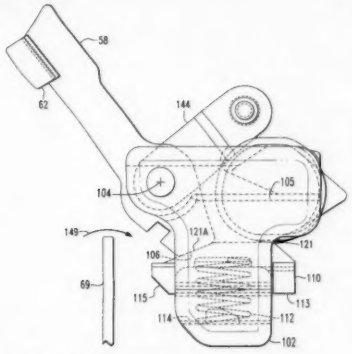
CIRCUIT BREAKER WITH DOUBLE RATE SPRING

Richard P. Malingowski, Finleyville; Todd M. Lathrop, Pittsburgh; Robert M. Slepian, Murrysville; Jere L. McKee, Zelienople; Lance Gula, Clinton, and Thomas A. Whitaker, North Huntingdon, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Division of application No. 08/864,141, May 28, 1997, abandoned. This application Feb. 9, 1998, Appl. No. 20,513.

Int. Cl.[6] H01H *9/20*

U.S. Cl. 335—167 **8 Claims**



1. An electrical circuit interrupter, comprising:

a housing;

an operating mechanism disposed within said housing;

separable main contacts disposed within said housing in a disposition of structural cooperation with said operating mechanism to be opened and closed by said operating mechanism;

spring resisted trip means disposed in said housing in structural relationship to said operating mechanism for movement in relationship with the level of current flowing through said separable main contacts for actuating said operating mechanism to open said separable main contacts when said current exceeds a predetermined value; and

said spring resisted trip means having a spring as part thereof, unit current exerted by said spring for resisting said movement as said movement charges said spring being a function of a discretely variable characteristic of said spring within limits along the length of said spring, and discretely varying at least once as said spring is charged to render the spring force non-proportional to spring length to increase the range of calibration of said spring resisted trip means.

5,910,761

VOLTAGE-DEPENDENT NON-LINEAR RESISTOR MEMBER, METHOD FOR PRODUCING THE SAME AND ARRESTER

Kei-Ichiro Kobayashi; Tomoaki Kato; Yoshio Takada; Osamu Wada; Masahiro Kobayashi; Naomi Furuse; Yukio Fujiwara; Shoichi Shichimiya, and Shinji Ishibe, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

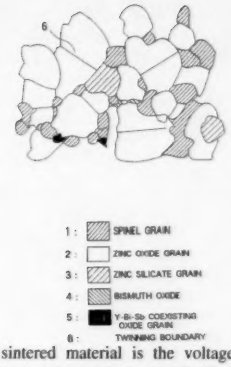
Filed Mar. 7, 1997, Appl. No. 813,594

Claims priority, application Japan, Apr. 23, 1996, 8-101202; Sep. 13, 1996, 8-243746

Int. Cl.[6] H01C *7/10*

U.S. Cl. 338—21 **4 Claims**

1. A voltage-dependent non-linear resistor member prepared by a process comprising adding at least one of a rare earth element R selected from Ho, Er and Yb in an amount of 0.05–1.0 mol % in terms of R_2O_3 to a composition principally containing zinc oxide and further containing bismuth oxide to form a mixture, and then burning the mixture to form a sintered material including zinc oxide crystal grains,


6
1 : SPINEL GRAIN
2 : ZINC OXIDE GRAIN
3 : ZINC SILICATE GRAIN
4 : BISMUTH OXIDE
5 : Y-Bi-Sb COEXISTING OXIDE GRAIN
6 : TWINNING BOUNDARY

wherein the sintered material is the voltage-dependent non-linear resistor member, and wherein Sb, Si and Mn are further added to the composition, and the sintered material includes oxide grains composed of the rare earth element R, Bi, Sb, Zn and Mn, and crystal grains of zinc silicate, Zn_2SiO_4, which exist between or inside of said zinc oxide crystal grains, and wherein the voltage-dependent non-linear resistor comprises the oxide grains of the rare earth element R, Bi, Sb, Zn and Mn in amounts of 20.7–39.3, 4.8–10.8, 24.8–33.2, 31.7–40.7 and 0.6–2.0 mol %, respectively, of all of the oxide grains in terms of R_2O_3, Bi_2O_3, Sb_2O_3, ZnO and Mn_3O_4, respectively.

5,910,762

MULTIPLE-BIT COMPARATOR WITH RELIABLE OUTPUT TIMING AND REDUCED HAZARDS

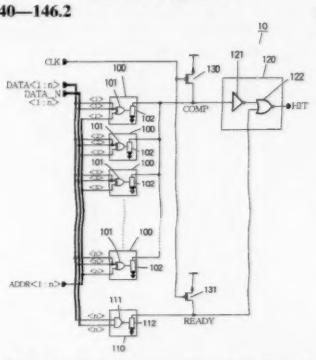
Satoru Kurotsu, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1997, Appl. No. 822,340

Claims priority, application Japan, Apr. 24, 1996, 8-102129

Int. Cl.[6] G06F *7/02*

U.S. Cl. 340—146.2 **29 Claims**



1. A multiple-bit comparator receiving a first signal and a pair of second signals, said first signal and said pair of second signals being multiple-bit signals, said pair of second signals remaining in an invalid state, in which at least one corresponding pair of bits in said pair of second signals are at identical logic levels, until said first signal becomes valid, then changing to a valid state in which all corresponding pairs of bits in said pair of second signals are at complementary logic levels, for generating an output signal indicating whether all bits of said first signal match all bits of a particular one signal in said pair of second signals, comprising:

a plurality of single-bit comparators for comparing individual bits of said first signal with individual bits of said pair of second signals and generating respective single-bit result signals;

a first node coupled to said plurality of single-bit comparators and receiving said single-bit result signals, for combining said single-bit result signals into a combined result signal;

an output control circuit for comparing said one corresponding pair of bits in said pair of second signals, detecting transitions thereof, and outputting a ready signal indicating when said pair of second signals are valid;

a second node coupled to said output control circuit, for receiving said ready signal; and

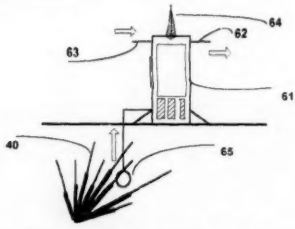
an output circuit coupled to said first node and said second node, for performing a logic operation on said combined result signal and said ready signal, thereby generating said output signal, said output signal being held in a fixed state while said ready signal indicates that said pair of second signals are invalid, and said output signal varying responsive to said combined result signal when said ready signal indicates that said pair of second signals are valid.

5,910,763

AREA WARNING SYSTEM FOR EARTHQUAKES AND OTHER NATURAL DISASTERS

John Flanagan, 160 Sequoia Ave., Carlsbad, Calif. 92008

Filed Feb. 18, 1997, Appl. No. 802,448
Int. Cl.[6] G08B *9/00*
U.S. Cl. 340—286.02 **9 Claims**



1. A wide area earthquake detection and general population advanced early warning system comprising:

a plurality of local station detector sites distributed as an array over a wide geographic area, each such site having:

a ground motion sensor having means for detecting earthquake generated "P" waves and subsequently received earthquake generated "S" waves;

an analyzer having means for determining the relative magnitude, intensity, and location, of an earthquake based upon receipt of said "P" waves and said "S" waves;

a transmitter having means for transmitting a signal indicative of said analyzer determined magnitude, intensity, and location to a central processing site;

a receiver having means for receiving signals from a central processing site; and

a transmitter having means for transmitting advanced early warning signals to the entire local surrounding general population around each local station detector site of said earthquake;

a central processing site located at a selected position distinct from said array of local detection sites and having:

a receiver having means for receiving said signals from said array of local station detection devices;

a computer having means for calculating and analyzing the magnitude, intensity, location, and direction of travel, of said earthquake based upon said signals; and

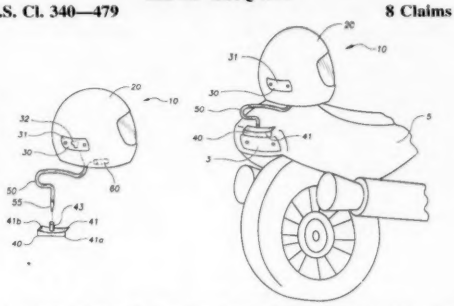
a transmitter having means for transmitting warning signals of said earthquake to selected local station detection sites; whereby each appropriate selected local station detector site as determined by the central processing site, will transmit advanced early warning signals specifically to those entire local surrounding general populations in a specific and targeted geographic area that are in imminent danger from an earthquake in progress.

5,910,764

BRAKE LIGHT SYSTEM FOR HELMETS

Dwayne E. Hayden, 7400 Countrywood Ave., NW, Alberquerque, N. Mex. 87120

Filed Jun. 26, 1998, Appl. No. 105,889
Int. Cl.[6] B60Q *1/44*
U.S. Cl. 340—479 **8 Claims**



1. A helmet brake light system for use in conjunction with a rear brake light of a motorcycle or an open motorized recreational vehicle comprising:

a helmet;

a helmet brake light coupled to a rear portion of the helmet;

a means for detecting the illumination of said rear motorcycle brake light coupled in close proximity to said rear motorcycle brake light;

an electrical connector cable electrically coupled to said helmet brake light and said means for detecting the illumination of said rear motorcycle brake light wherein, when the illumination of said rear motorcycle brake light is detected by said means for detecting the illumination of said rear motorcycle brake light, said helmet brake light is turned on;

a battery source housed in said helmet and electrically coupled to said means for detecting the illumination of said rear motorcycle brake light through said electrical connector cable, one free end of said electrical connector cable being fixedly coupled to said helmet and the other free end of said electrical connector cable is removably coupled to said means for detecting the illumination of said rear motorcycle brake light;

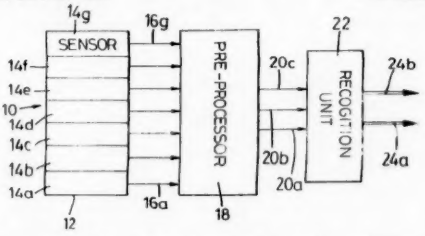
said helmet brake light system further comprising a housing for housing therein said means for detecting the illumination of said rear motorcycle brake light and a jack coupled to said housing.

5,910,765

SENSOR MODULE

Charles S. Slemon, Encinitas; William Michael Lafferty, Leucadia, and Clark C. Guest, San Diego, all of Calif., assignors to Advanced Optical Controls, Inc., Arlington, Va.

Continuation-in-part of application No. 08/146,945, Nov. 2, 1993, abandoned, and application No. 08/147,329, Nov. 3, 1993, Pat. No. 5,400,641. This application Mar. 22, 1995, Appl. No. 408,590.
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—517 **13 Claims**



1. A detector for distinguishing a single specific environmental event from a plurality of distinctive environmental events, said detector comprising:

a plurality of sensors, all of said sensors being selectively arranged to directly detect a plurality of environmental characteristics of said plurality of distinctive environmental events from a plurality of spatially dispersed and parametrically different perspectives, each sensor of said plurality of sensors generating an output indicative of at least one said characteristic, and each said characteristic being detected by at least one said sensor;

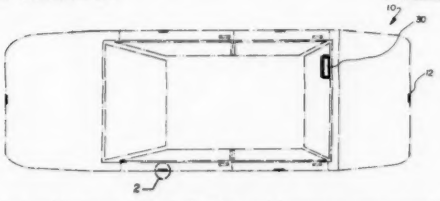
a pre-processor connected to said plurality of sensors for eliminating repetitively redundant or superfluous data from said sensor outputs, and for joining related and overlapping data in said sensor outputs into data segments to create a convolved pattern of said data segments wherein each said data segment is representative of a specific said environmental characteristic; and

a neural network connected to said pre-processor for recognizing said convolved pattern of said joined data segments to extract information about each said distinctive environmental event from said convolved pattern.

5,910,766
VEHICULAR ACCIDENT LOCATOR AND IDENTIFICATION SYSTEM

Stephen M. Evans, 5238 Mountain Village Ct., Stone Mountain, Ga. 30083

Filed Dec. 4, 1997, Appl. No. 985,169
Int. Cl.[6] G08B *1/08*
U.S. Cl. 340—539 **3 Claims**



1. A vehicular accident indication and locator system comprising, in combination:

a vehicle having a body and an interior compartment having a dash;

a plurality of sensor assemblies each including an elastomeric disk having a front face, a rear face, and a periphery formed therebetween defining an interior space, the front face having an adhesive lining situated thereon for adhering the same to an inner surface of the body of the vehicle, ears formed on diametrically opposed sides of the disk for facilitating mounting, an elongated protrusion with a triangular cross-section integrally formed on the rear face within the interior space, a pair of stanchions coupled to the rear face within the interior space and extending toward the front face, a brittle conductive element comprising a fuse with a glass casing having a pair of ends mounted on ends of the stanchions such that the element is situated in perpendicular relationship with the protrusion and further spaced therefrom, the sensor assemblies being mounted throughout the body of the vehicle and the elements thereof being connected in series via insulated wires such that an activation signal is transmitted upon the breaking of any one of the elements by way of an accident;

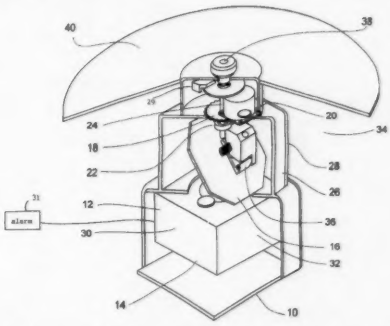
a transmitter housing situated on the dash of the vehicle with a display situated thereon, the display adapted to provide a first indication in the form of a visual light upon the lack of receipt of power and further provide a second indication in the form of a visual light having the shape of a word upon the receipt of the activation signal, the transmitter housing further having transmitter means connected to the elements of the sensor assemblies for transmitting a coded signal unique to the vehicle upon receipt of the activation signal wherein the, transmitter means continues transmission of the coded signal unconditionally until power is depleted; and

a receiver base positioned remote from the vehicle and adapted to receive the coded signal to identify the vehicle associated therewith and further triangulate the exact location of the vehicle such that an emergency vehicle may be dispatched.

5,910,767
INTRUDER DETECTOR SYSTEM

Yaacov Frucht, Akko, Israel, assignor to Laser Guard, Nazeret-Ilit, Israel

Filed Jul. 11, 1997, Appl. No. 893,451
Int. Cl.[6] G08B *13/181*
U.S. Cl. 340—557 **20 Claims**



1. An intruder detection system for detecting a presence of an intruder in an area to be protected, the system comprising:

(a) a light source for emitting a light beam for scanning the area to be protected and for reflecting from a target, such that said light beam becomes a reflected light beam;

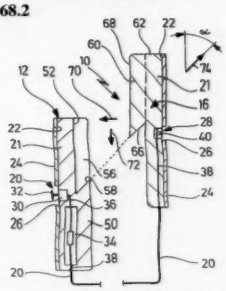
(b) a detector for receiving said reflected light beam; and

(c) an signal processor for determining an intensity of said reflected light beam and a distance of said light source from said target, and for comparing said intensity and said distance to previously stored values of said intensity and said distance, such that a change in a value of said intensity or alternatively of said distance indicates the presence of the intruder.

5,910,768
ANTI-THEFT DEVICE

Reinhold Ott, 6 Willow Street, Waterloo, Ontario N2J 4S3, Canada

Continuation of application No. PCT/EP96/0119960404, Apr. 4, 1996. This application Oct. 3, 1997, Appl. No. 943,892.
Claims priority, application Germany, Apr. 4, 1995, 196 12 567; Feb. 12, 1996, 296 02 412 U
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—568.2 **36 Claims**



1. A device for securing a goods article against theft, said device comprising:

a first securing part for attachment to a substantially flat surface of an object,

a second securing part for attachment to a surface of the goods article,

a cable connecting the first and second securing parts,

at least one of said securing parts having a sensor element for monitoring a proper attachment of the securing part to the surface to which it is attached;

at least the other one of the securing parts having monitoring means connected to the sensor element via said cable and constructed so that an alarm is triggered upon disruption of at least one of the cable and a proper attachment monitored by the sensor element; and

connection means for providing a detachable holding connection between said securing parts.

5,910,769

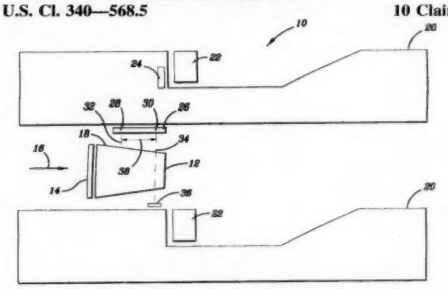
SHOPPING CART SCANNING SYSTEM

Edwin Geisler, c/o Yorktown Electronic Associates, 238 Rocklawn La., Lancaster, Pa. 07601

Filed May 27, 1998, Appl. No. 86,062

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—568.5 **10 Claims**



1. A system for monitoring a lower tray mounted at a first predetermined elevation on a shopping cart having a reflective member at a second predetermined elevation, said system detecting the presence of articles in said lower tray, said system comprising:

(a) first and second photoelectric devices each responsive to abrupt changes in light intensity and generating first and second output signals respectively, said first and second photoelectric devices being separated from each other by a first predetermined distance so as to establish a scanning field, with said first photoelectric device being located at the entrance portion of said scanning field and at an elevation that is in correspondence with said second predetermined elevation so as to define a first light path, and with said second photoelectric device being located at the exit portion of said scanning field and at an elevation that is in correspondence with said first predetermined elevation so as to define a second light path, said first light path being established when said reflective member is in coincidence with said first photoelectric device causing said first output signal to be generated, said second light path being interrupted when any article that is present in said lower tray is in coincidence with said second photoelectric device causing said second output signal to be generated;

(b) means responsive to said first output signal to generate a time interval signal having a first predetermined duration; and

(c) means responsive to said second output signal for generating a voice message if said second output signal is generated before said first predetermined duration expires.

5,910,770

TAG FOR THEFT PREVENTION

Jiro Ohara, Osaka, Japan, assignor to UNI Electronics Industry Co., Ltd., Osaka; Shiro Ohara, Hyogo, and Yasushi Ohara, Tokyo, all of Japan

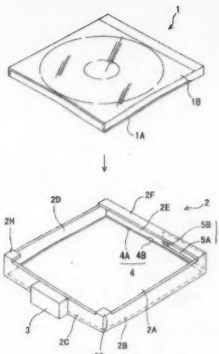
Filed Apr. 16, 1998, Appl. No. 60,978

Claims priority, application Japan, Aug. 22, 1997, 9-226352; Jan. 28, 1998, 10-015412

Int. Cl.[6] G08B *13/187*

U.S. Cl. 340—572.5 **4 Claims**

1. In a theft preventing system in which whether or not electric wave absorption occurs due to the presence of a resonant circuit



between a gate with a built-in transmission antenna and another gate with a built-in receiving antenna can be detected, which resonant circuit is provided on a container case containing a recording medium such as a CD or on a protective case covering the container case,

a tag for theft prevention, comprising:

a detecting circuit which is positioned at a circumference edge of at least one of the sides of the container case or protective case parallel to the surface of the recording medium, and is capable of detecting electric waves; and

a resonating circuit which is positioned in one specific side perpendicular to said parallel sides of the container case or protective case, and is closely positioned with or connected to said detecting circuit.

5,910,771

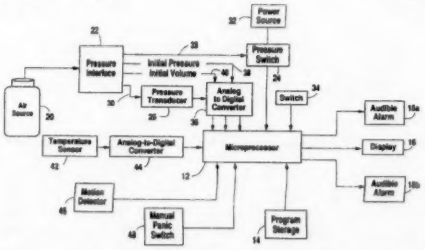
INTEGRATED SAFETY MONITORING AND ALARM SYSTEM

L. Herbert Stumberg, Bexar County, Tex., and James A. Fulton, West Grove, Pa., assignors to North-South Corporation, San Antonio, Tex.

Continuation of application No. 08/474,516, Jun. 7, 1995, Pat. No. 5,689,234, which is a continuation of application No. 08/348,762, Dec. 2, 1994, abandoned, which is a continuation of application No. 08/200,908, Feb. 22, 1994, abandoned, which is a continuation of application No. 08/079,670, Jun. 18, 1993, abandoned, which is a continuation of application No. 07/963,098, Oct. 19, 1992, abandoned, which is a continuation of application No. 07/741,269, Aug. 6, 1991, Pat. No. 5,157,378. This application Nov. 17, 1997, Appl. No. 971,532.

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—573.1 **7 Claims**



1. A monitoring and alarm system for breathing apparatus, the system comprising

a timer for at least first and second periods;

at least one pneumatic pressure transducer in the breathing apparatus;

a motion detector;

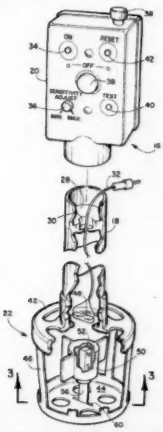
an alarm responsive to pneumatic pressure below a predetermined level; and

at least first and second alarms responsive to lack of motion detected during corresponding time periods respectively.

5,910,772
POOL ALARM

Joseph Hui, 140-B S. Whisman Rd., Mountain View, Calif. 94041

Filed Aug. 8, 1997, Appl. No. 908,918
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573.6 **9 Claims**



1. A pool alarm apparatus, which comprises:

switch support means for supporting at least one reed switch;

magnet support means for supporting an elongated permanent magnet adjacent to said reed switch and below a pool water surface;

said permanent magnet having north and south pole ends and arranged with a line between said north and south pole ends approximately perpendicular to said reed switch;

said magnet support means mounted for movement relative to said reed switch along a plane in which said elongated permanent magnet lies;

alarm means enabled by actuation of said reed switch by movement of said elongated permanent magnet relative thereto; and

said support means comprising a buoyant member having proximal and distal ends, an open enclosure surrounding said buoyant member and having a bottom, a slot in said bottom, a strap having a proximal end secured to said buoyant member distal end and a distal end extending through said slot, means connected to said strap distal end for allowing pivotal movement of said strap and buoyant member in a single plane and said magnet being embedded in said buoyant member with one pole adjacent said buoyant member proximal end.

5,910,773
OXYGEN SUPPLY SYSTEM FOR WHEELED VEHICLES

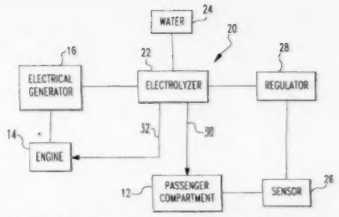
David W. Brownlee, 826 Eleventh St., Oakmont, Pa. 15139

Filed Jan. 18, 1998, Appl. No. 135,927
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—576 **8 Claims**

1. In a wheeled vehicle having a passenger compartment, an internal combustion engine for propelling the vehicle and an electricity generating device, the improvement comprising a system for supplying gaseous oxygen to said passenger compartment for sleep, doze or drowsiness prevention, including:

a container for water;

an electrolysis system for electrolyzing water to evolve gaseous oxygen and gaseous hydrogen using electricity from said electricity generating device;



a pipe for flowing gaseous oxygen from said electrolysis system to said passenger compartment;

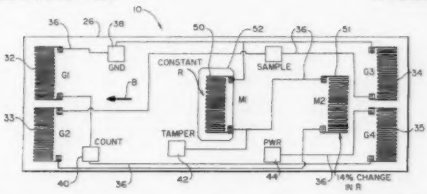
an oxygen concentration detection device for detecting the oxygen content of air in said passenger compartment; and

a regulator for regulating the flow of oxygen through said pipe to said passenger compartment to commence the flow when the oxygen content in said passenger compartment falls below a first preselected level and to stop when the oxygen content in said compartment rises to a second preselected level.

5,910,774
SENSOR FOR COUNT AND TAMPER DETECTION

Roberto Capriotti, Farmington, and Mizanur Rahman, Minneapolis, both of Minn., assignors to Itron, Inc., Spokane, Wash.

Provisional application No. 60/026,277, Sep. 18, 1996. This application Sep. 12, 1997, Appl. No. 928,839.
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—637 **29 Claims**



1. In a meter having a spatially varying magnetic field, the spatially varying magnetic field varying with respect to source and being related to a count of usage of a metered product, a sensor for sensing count and tamper, comprising:

a count sensor disposed proximate the source of the spatially varying magnetic field for the detection of gradiations of the spatially varying magnetic field, said count sensor being substantially unaffected by a static magnetic field over a certain range of field strength; and

a tamper sensor disposed proximate the count sensor within the spatially varying magnetic field for the detection of a tampering static magnetic field applied external to the meter.

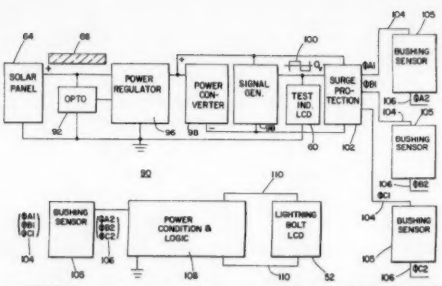
5,910,775
PHASING AND INDICATOR ARRANGEMENTS FOR SWITCHGEAR OR THE LIKE

Gregory C. Mears, Chicago, and Brian P. Mugalian, Evanston, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Continuation-in-part of application No. 08/705,460, Aug. 29, 1996. This application Jan. 24, 1997, Appl. No. 788,158.
Int. Cl.[6] G08B *5/00*
U.S. Cl. 340—815.4 **17 Claims**

1. A display arrangement for indicating the energized/deenergized status of at least one electrical circuit point comprising:

indicator means having an input responsive to an indicator input signal for displaying a representation of the energized/deenergized status of the at least one electrical circuit point;



test initiating means responsive to a predetermined test input for initiating the testing of said indicator means, said test initiating means being responsive to light energy at a first predetermined location and the blocking of light energy at a second predetermined location to initiate said testing of said indicator means; and

test display means responsive to said test initiating means for displaying a predetermined representation corresponding to a test symbol whereby an indication is provided when testing said indicator means.

5,910,776

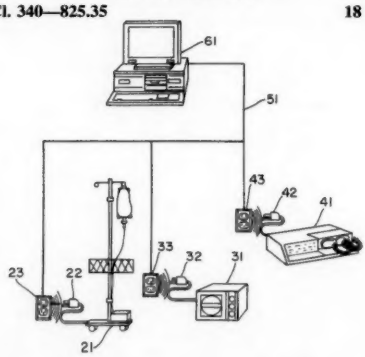
METHOD AND APPARATUS FOR IDENTIFYING LOCATING OR MONITORING EQUIPMENT OR OTHER OBJECTS

Donald Black, Erie, Colo., assignor to ID Technologies, Inc., Boulder, Colo.

Continuation of application No. 08/327,560, Oct. 24, 1994, abandoned. This application Dec. 4, 1996, Appl. No. 753,968.

Int. Cl.[6] H04B *3/54*

U.S. Cl. 340—825.35 **18 Claims**



8. An apparatus for identifying an object having a connector which can be connected to a receptacle for at least one reason other than identifying the object comprising:

a) a transponder attached to the connector; and

b) a non-contact reader having a read range attached to the receptacle so that when the transponder is within the read range the reader can read object information from the transponder.

5,910,777

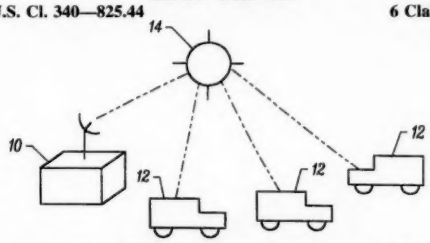
POWER EFFICIENT PAGING FOR MOBILE USERS IN A TERRESTRIAL AND SATELLITE COMMUNICATIONS SYSTEM

Francis F. Natali, Port Townsend, Wash., and John E. Ohlson, Mountain View, Calif., assignors to Stanford Telecommunications, Inc., Sunnyvale, Calif.

Filed Jan. 22, 1997, Appl. No. 787,593

Int. Cl.[6] G08B *5/22*

U.S. Cl. 340—825.44 **6 Claims**



1. In a mobile communication system in which a ground station communicates data with mobile stations at a message transmission energy level, a power efficient method of paging a mobile station from the ground station comprising the steps of:

a) assigning a unique digital address to each mobile station;

b) mapping each unique digital address into a unique member of an orthogonal signal set;

c) transmitting the unique member of the orthogonal signal corresponding to the mobile being paged to some or all mobile stations at a paging energy level lower than the message transmission energy level, and

d) each mobile station correlating a received orthogonal signal set against the orthogonal function corresponding to its address using a correlator for identifying the orthogonal function, whereby a page is recognized by signal detection without the need for message decoding.

5,910,778

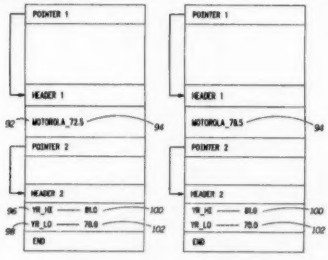
EMBEDDED PROTOCOL

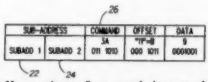
Thomas L. Klein, West Palm Beach; Gary J. Morse, Boca Raton, and Robert N. Nelms, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of application No. 08/531,932, Sep. 21, 1995, abandoned. This application Aug. 28, 1997, Appl. No. 999,617.

Int. Cl.[6] H04Q *7/14*

U.S. Cl. 340—825.44 **6 Claims**





1. A selective call receiver for receiving and storing a variable length message, said receiver comprising a processor coupled to a memory element, said receiver configured to receive a signal transmitted in a standard protocol format comprising an address portion and a message portion, said receiver further comprising:

means for receiving primary source information within said address portion of said signal;

means for determining whether said receiver is permitted to receive messages from a source corresponding with said primary source information;

means for determining whether said message portion of said standard protocol format includes an offset update command and variable length data; and

means for receiving and storing said message portion of said signal within said memory element, wherein said means for receiving and storing offsets a command parameter specified number of characters from the beginning of an existing message stored in said memory element prior to writing the variable length data over a portion of said existing message, when said message portion includes said offset update command, wherein the command parameter can specify an offset to any character within a range of at least 32 characters.

5,910,779

RADIO SCANNING SYSTEM USING ACOUSTICAL SURFACE WAVES (SW RADIO SCANNING SYSTEM)

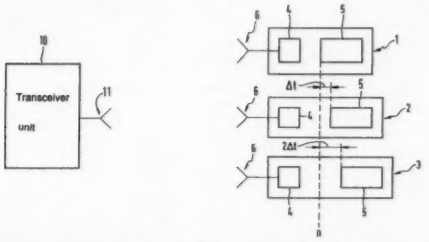
Wolf-Eckhart Bulst, München; Clemens Ruppel, Kirchheim; Leonhard Reindl, Stephanskirchen, all of Germany, and Franz Seifert, Vienna, Austria, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 7, 1996, Appl. No. 744,464

Claims priority, application Germany, Nov. 7, 1995, 195 41 475

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 340—825.54 **5 Claims**



1. A radio scanning system using acoustical surface waves (SW radio scanning system), comprising:

a transceiver unit and sensor elements defining at least one parameter to be scanned;

said transceiver unit having a transmitter transmitting question signals to said sensor elements and a receiver receiving and evaluating answer signals transmitted back by said sensor elements, the question signals and the answer signals being made chronologically inverse to one another by said transmitter and said sensor elements; and

said sensor elements having different SW transit times.

5,910,780

SWITCHED-TRANSCONDUCTANCE MULTIPLEXER CIRCUIT WITH INTEGRATED T-SWITCHES

Kimo Y. F. Tam, Arlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Nov. 13, 1996, Appl. No. 747,861

Int. Cl.[6] H04Q *19/00;* **G06F** *13/00;* **H04N** *5/268;* **H03K** *19/094*

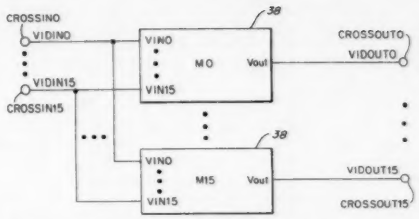
U.S. Cl. 340—825.79 **39 Claims**

1. A circuit, comprising:

at least one transconductance stage including:

at least one input node to receive an input voltage;

at least one output node to provide an output current having an amplitude that is proportional to an amplitude of the input voltage;



a transconductance element that receives the input voltage from the at least one input node, receives a biasing current to at least partially enable the transconductance element and, when enabled, provides the output current to at least one circuit node of the transconductance element;

at least one biasing device to selectively provide the biasing current to the transconductance element, the at least one biasing device being in an off state when the transconductance element is not enabled;

at least one first switch coupled between the at least one circuit node and the at least one output node such that activation of the at least one first switch when the transconductance element is enabled permits the output current to flow between the at least one circuit node and the at least one output node; and

at least one second switch coupled between the at least one circuit node and a constant voltage node such that activation of the at least one second switch when the transconductance element is not enabled, regardless of a state of the at least one first switch, causes the at least one circuit node to be coupled to the constant voltage node.

5,910,781

CAPACITIVE ANGLE DETECTOR

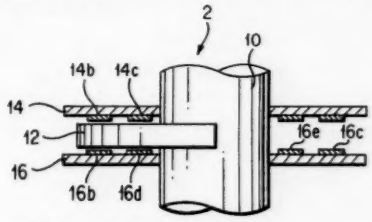
Masayuki Kawamoto, Toyota; Kimitoshi Tsuzi, Mie, and Junichi Nakaho, Niwa, all of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan

Filed Dec. 19, 1997, Appl. No. 994,945

Claims priority, application Japan, Dec. 19, 1996, 8-339982; Apr. 3, 1997, 9-85384

Int. Cl.[6] G08C *19/10*

U.S. Cl. 340—870.37 **5 Claims**



1. A capacitive angle detector comprising:

a first member having at least one electrode;

a second member having a plurality of electrodes thereon to define a plurality of capacitors with at least said one electrode on said first member, the first and second members being non-rotatable with respect to and arranged opposite each other;

a third member arranged between said first and second members and moving relative to said first and second members in accordance with rotating movement of a rotating body, said third member thereby changing capacitance values of said capacitors; and

said capacitive angle detector detecting a rotating angle of said rotating body based on the capacitance values of said capacitors,

wherein said third member is made of at least one of a dielectric material and a conductive metal material and is partially interposed between said at least one electrode and said plurality of electrodes of said first and second members, respectively,

the capacitors defined by said first and second members are composed of a plurality of sets of capacitors, and, in accordance with rotating movement of said third member, the capacitance values of respective sets of the capacitors change with a predetermined phase difference, and

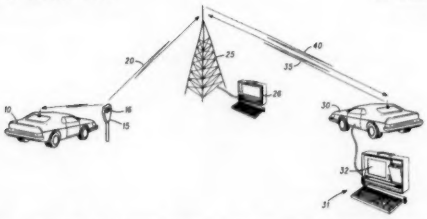
said at least one electrode on said first member arranged opposite said plurality of electrodes on said second member comprises large and small-diameter circular electrodes each having a predetermined width, and said electrodes on said second member are formed by half-dividing large and small-diameter circular electrodes each having a predetermined width and offsetting the half-divided large and small-diameter electrodes from each other uniformly by 90°.

5,910,782

ON-BOARD VEHICLE PARKING SPACE FINDER SERVICE

Judith E. Schmitt, and John E. Buchalo, both of Palatine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 25, 1997, Appl. No. 805,536
Int. Cl.[6] G08G *1/123*
U.S. Cl. 340—995 **21 Claims**



1. A method of delivering parking availability information to a driver in a vehicle equipped with an on-board navigational computer, the method comprising the on-board navigational computer performed steps of:

receiving a driver request to initiate a parking availability request;

transmitting the parking availability request over a wireless medium to a central site;

receiving a response message representative of current parking availability information in a geographic area from the central site, the central site collecting parking availability information transmitted from sensor devices monitoring associated parking spaces, said parking spaces comprising at least one on-street parking space; and

generating navigational information as a function of said parking availability information to assist the driver in locating an available parking space.

5,910,783

PSEUDO BARREL SHIFTING FOR ENTROPY ENCODING

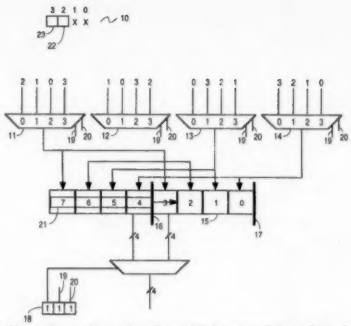
Edward Pazmino, Scottsdale, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 2, 1997, Appl. No. 867,557
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—60 **19 Claims**

1. An encoder comprising:

a buffer of a size at least twice a maximum symbol size;

an enabling window which enables a number of bit locations of the buffer at least equal to a symbol size;



a plurality of steering circuits which steer bits of an incoming symbol into enabled bit locations in the buffer; and

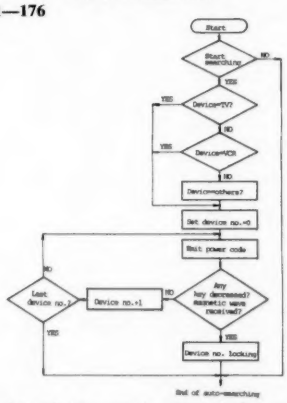
a read out circuit which reads data of the maximum symbol size from the buffer responsive to a boundary crossing.

5,910,784

CONTROL CIRCUIT OF A REMOTE CONTROLLER

Jung-Hua Lai, No. 4, Lane 86, Te-Ho Rd., Yungho City, Taipei County, Taiwan

Filed Oct. 6, 1997, Appl. No. 944,475
Int. Cl.[6] G08C *19/12*
U.S. Cl. 341—176 **3 Claims**



1. A control circuit for a remote control device, comprising:

a key switch array for designating predetermined functions of an electrical apparatus selected to be controlled;

a processor having a plurality of first inputs coupled to said key switch array, said processor including (a) a data memory having signal codes of a plurality of different electrical apparatuses pre-stored therein, (b) a procedure table memory for storing a plurality of functions associated with said key switch array, (c) a computing element for sequential output of signal codes from said data memory responsive to a first momentary operation of selected keys of said key switch array, (d) a search interruption control coupled to said computing element for terminating said sequential output responsive to a second momentary operation of any key of said key switch array and storing a signal code being output coincidence with said second momentary operation of any key, and (e) timing means for controlling a rate of said sequential output of signal codes; and,

an emission output device having an input coupled to said processor for transmitting said signal codes to the electrical apparatus.

5,910,785

METHOD FOR THE PROCESSING OF THE RECEPTION SIGNAL OF A SYNTHETIC APERTURE RADAR WITH FREQUENCY RAMPS

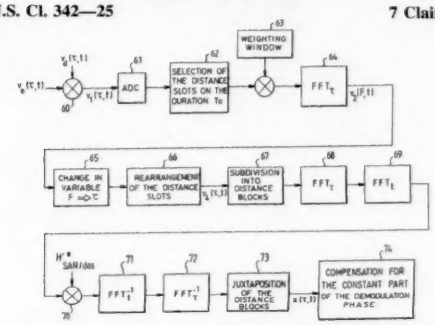
Eric Normant, Montigny le Bretonneux, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 30, 1998, Appl. No. 69,989

Claims priority, application France, May 7, 1997, 97 05624

Int. Cl.[6] G01S *13/00*

U.S. Cl. 342—25 **7 Claims**


WEIGHTING WINDOW
ADC
SELECTION OF THE DISTANCE SLOTS ON THE DURATION To
CHANGE IN VARIABLE F = αT
REARRANGEMENT OF THE DISTANCE SLOTS
SUBDIVISION INTO DISTANCE BLOCKS
JUXTAPOSITION OF THE DISTANCE BLOCKS
COMPENSATION FOR THE CONSTANT PART OF THE DEMODULATION PHASE

1. A method for the processing of the reception signal of a synthetic aperture radar or SAR with frequency ramps to obtain a radar image, said SAR being placed on board a carrier moving above a region of terrain to be imaged that it illuminates, sending out coherently repeated linear frequency-modulated pulses with a duration T, demodulating the echo signal, received in return between each transmitted pulse, by means of a demodulation ramp that is centered in range on the middle of the useful illuminated zone or useful swath, resumes the form of all or part of the transmitted pulse and has a duration T_d smaller than or equal to the duration T of a transmitted pulse, sufficient to cover the reception time interval where the echo signals of all the targets of the useful swath overlap and, after demodulation, delivers an unprocessed video reception signal available in the form of successive samples or reception data elements that are taken at a double rate: a fast rate corresponding to the sequence of range gates and defining a temporal dimension of range τ along a range axis oriented laterally to the path of the carrier of the SAR and a slow rate corresponding to the succession of recurrences and defining a temporal dimension of azimuth t along an azimuth axis oriented in the direction of shift of the carrier of the SAR, these samples or data elements taking the form of a table of reception data with two dimensions, range and azimuth, said method comprising the following successive processing steps:

the selection of a useful duration T_u for the demodulation beginning at the earliest at the instant of the start of reception of an echo sent back by a target placed in range at the far end of the useful swath and ending at the latest at the instant of the end of reception of an echo sent back by a target placed in range at the near end of the useful swath,

the replacement of the data elements of the table of reception data, considered in the range dimension, by their Fourier transform which is one-dimensional in range for the obtaining, after the demodulation, of a type of pulse compression to which there is assigned a parasitic phase term of pulse compression,

the rearrangement of the data elements of the table in the range dimension in order to have available data corresponding to an order of moving away that increases in range,

the subdivision of the table into overlapping bands, parallel to the azimuth axis, so as to have bands corresponding to narrow zones of range τ_i where it is possible, as a function of the geometrical parameters of the image taken, to locally determine a image focusing 2D filter having a pulse response $h(\tau,t,\tau_i)$ with two temporal variables, namely τ range and t azimuth, and a function of correction of the parasitic phase due to the pulse compression, that are stationary in the range band τ_i,

the filtering of the table bands by the image focusing 2D filter whose pulse response has been modified by the parasitic phase correction function, and

the juxtaposition of the table bands resulting from the filtering to obtain a table of complex reflection coefficients of the points of the illuminated region of ground, and

the construction of an image of the illuminated region from the moduli of the complex reflection coefficients represented in the table obtained in the previous step.

5,910,786

ON-VEHICLE RADAR

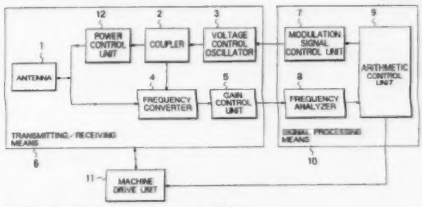
Masahiro Watanabe, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 9, 1998, Appl. No. 5,015

Claims priority, application Japan, Oct. 2, 1997, 9-269594

Int. Cl.[6] G01S *13/60;13/93*

U.S. Cl. 342—70 **10 Claims**



1. An on-vehicle radar, comprising:

a transmitting/receiving means for transmitting and receiving a radio wave with a relatively high frequency; and

a signal processing means for calculating a relative distance to an object and a relative velocity of the object on the basis of a radio wave which is transmitted by said transmitting/receiving means, reflected from the object, and received by said transmitting/receiving means,

wherein said transmitting/receiving means controls the power of a transmitted radio wave so that the power of a radio wave to be transmitted in any transmission direction other than a specified transmission direction will be lower than that of a radio wave to be transmitted in the specified transmission direction.

5,910,787

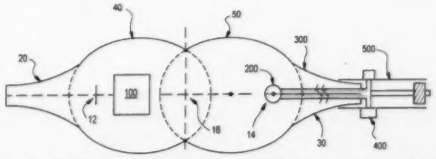
INTEGRATED PROJECTOR-LOW RADAR CROSS-SECTION (RCS) SOURCE SUPPORT PYLON AND LOW RCS MEASUREMENT SYSTEM EMPLOYING SAME

Donald J. Berg, Mesa, Ariz.; Carl A. Mentzer, Poway, Calif., and Paul T. Fisher, Scottsdale, Ariz., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Feb. 9, 1998, Appl. No. 20,339

Int. Cl.[6] H01Q *17/00*

U.S. Cl. 342—165 **22 Claims**



1. An integrated source-support pylon for a measurement chamber, which measurement chamber surrounds a target of interest and a source intersected by a line defined by focal points associated with the measurement chamber, and which measurement chamber includes a chamber having an interior defined by rotation of a nonlinear curve about the line, and first and second focusing elements which couple the scattered signals out of the chamber, the

source-support pylon and the measurement chamber cooperatively separating and extracting scattered signals from the measurement chamber, the source-support pylon comprising:

a shaped pylon which is coaxial with the line and which is coincident with one of the focal points, said shaped pylon directing the scattered signals into one of the first and second focusing elements; and

a parabolic reflector supported by said shaped pylon.

5,910,788

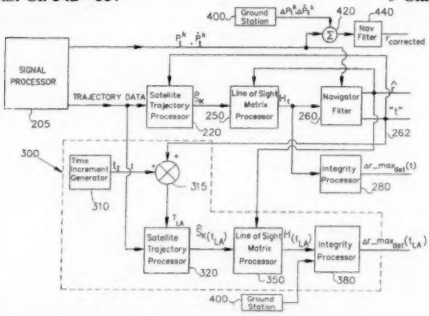
PREDICTIVE APPROACH INTEGRITY

Kim A. Class, Glendale, Ariz., assignor to Honeywell, Inc.

Filed Apr. 17, 1997, Appl. No. 843,941

Int. Cl.[6] H04B *7/185;* **G01S** *5/02*

U.S. Cl. 342—357 **9 Claims**



1. A satellite positioning system comprising:

a satellite positioning system receiver for receiving satellite information signals from selected ones of a plurality of satellites, and for deriving corresponding satellite data from selected ones of said satellite information signals, where each of said satellites transmits a satellite information signal containing satellite data sufficient to determine the corresponding range between the satellite and said satellite positioning system receiver, and which said satellite data from selected ones of a plurality of satellites is sufficient to determine an estimated geocentric position of said satellite positioning system receiver;

an information signal processor for deriving from said satellite data at least i) information for determining the trajectory of each of said selected ones of said plurality of satellites, and ii) a pseudo range value between said receiver and each of said selected one of said plurality of satellites, where said pseudo range value is an estimate of the true range value between said receiver and said selected ones of said plurality of satellites determined by a measurement of the corresponding satellite signal travel time from the satellite to the receiver;

means for deriving an estimated geocentric position of said receiver, at a particular time, as a function of selected ones of said pseudo range values and corresponding ones of the geocentric positions of said plurality of said satellites derived from said trajectory information;

means for deriving a line of sight vector measurement matrix H in which said line of sight vector measurement matrix is descriptive of the vectors between said estimated geocentric position of the receiver and said geocentric position of said selected satellites at a selected future time;

an integrity processor responsive to said line of sight vector measurement matrix H at said selected future time; and

a ground station providing measurement statistics to the integrity processor for determining an improved accurate reading of a position error bound value at said future time.

5,910,789

METHOD FOR INTEGRITY MONITORING IN POSITION DETERMINATION

Erik Vigen, Hønefoss, Norway, assignor to Geco A.S., Stavanger, Norway

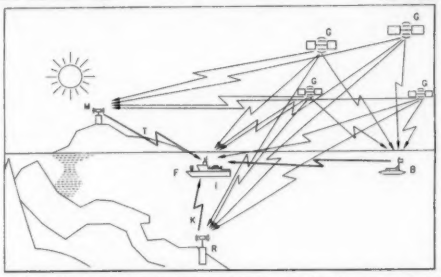
PCT No. PCT/NO95/00239, § 371 Date Aug. 28, 1997, § 102(e) Date Aug. 28, 1997, PCT Pub. No. WO96/21163, PCT Pub. Date Jul. 11, 1996

PCT Filed Dec. 20, 1995, Appl. No. 849,257

Claims priority, application Norway, Dec. 20, 1994, 944954

Int. Cl.[6] G01S *5/02*

U.S. Cl. 342—357 **10 Claims**



1. A method of integrity monitoring in position determination by means of Global Positioning System (GPS), wherein there is employed a monitor station (M) with a first GPS receiver, provided at a location with a known geographical position, and a user location (F) with a second GPS receiver, the integrity of whose geographical position has to be monitored,

characterised by transferring first GPS-based position measurement results obtained at the monitor station (M) on a communication line from the monitor station (M) to the user location (F);

determining a space vector between the location of the monitor station (M) and the user location (F) by means of second GPS-based position measurement results obtained at the user location (F) and said first GPS-based position measurement results obtained at the monitor station (M); and

determining the degree of agreement among a GPS-based position measurement of the user location (F), the space vector and the known position of the monitor station (M), the degree of agreement being compared against a maximum error in the position for the user location (F) against which protection is desired.

5,910,790

BROAD CONICAL-MODE HELICAL ANTENNA

Norihiko Ohmuro; Akio Kuramoto, and Kosuke Tanabe, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of application No. 08/363,914, Dec. 27, 1994, abandoned. This application Dec. 19, 1996, Appl. No. 769,671.

Claims priority, application Japan, Dec. 28, 1993, 5-334808; Dec. 28, 1993, 5-334809; Dec. 28, 1993, 5-334810

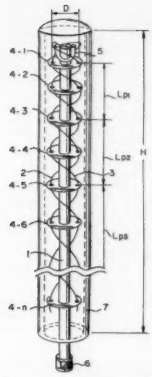
Int. Cl.[6] H01Q *1/36*

U.S. Cl. 343—895 **31 Claims**

1. A helical antenna for producing a conical beam comprising:

at least one coaxial cable defining a cable length;

first and second helical conductors oppositely wound on said at least one coaxial cable, wherein each of said helical conductors comprises a plurality of turns positioned along said cable length with spaces between adjacent turns defining a pitch, a wound state of said helical conductors being non-uniform and non-logarithmic so that said pitch is varied along said cable length,



said two helical conductors, when properly tuned and energized, providing a concurrent and direct generation of two oppositely polarized waves which are emitted by said antenna to travel in the same direction in a broad radiation pattern and with a broad elevation angle range.

5,910,791

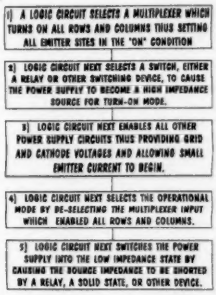
METHOD AND CIRCUIT FOR REDUCING EMISSION TO GRID IN FIELD EMISSION DISPLAYS

David A. Zimlich; Thomas W. Voshell, and David A. Cathey, Jr., all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of application No. 08/509,501, Jul. 28, 1995, Pat. No. 5,721,560. This application Mar. 28, 1996, Appl. No. 623,509.

Int. Cl.[6] G09G *3/22*

U.S. Cl. 345—74 **31 Claims**


1) A LOGIC CIRCUIT SELECTS A MULTIPLEXER WHICH TURNS ON ALL ROWS AND COLUMNS THUS SETTING ALL EMITTER SITES IN THE "ON" CONDITION
2) LOGIC CIRCUIT NEXT SELECTS A SWITCH, EITHER A RELAY OR OTHER SWITCHING DEVICE, TO CAUSE THE POWER SUPPLY TO BECOME A HIGH IMPEDANCE SOURCE FOR TURN-ON MODE.
3) LOGIC CIRCUIT NEXT ENABLES ALL OTHER POWER SUPPLY CIRCUITS THUS PROVIDING GRID AND CATHODE VOLTAGES AND ALLOWING SMALL EMITTER CURRENT TO BEGIN.
4) LOGIC CIRCUIT NEXT SELECTS THE OPERATIONAL MODE BY DE-SELECTING THE MULTIPLEXER INPUT WHICH ENABLED ALL ROWS AND COLUMNS.
5) LOGIC CIRCUIT NEXT SWITCHES THE POWER SUPPLY INTO THE LOW IMPEDANCE STATE BY CAUSING THE SOURCE IMPEDANCE TO BE SHORTED BY A RELAY, A SOLID STATE, OR OTHER DEVICE.

1. A method for controlling a field emission display comprising;

sensing a voltage at a display screen for the display and providing a first signal and a second signal based on an amplitude of the voltage;

detecting the first signal and the second signal;

providing a fault detection circuit configured to detect a fault signal during the detecting step, the fault detection circuit comprising a peak detector;

enabling a grid for the display with the first signal provided the fault signal is not detected; and

discharging the grid with the second signal.

5,910,792

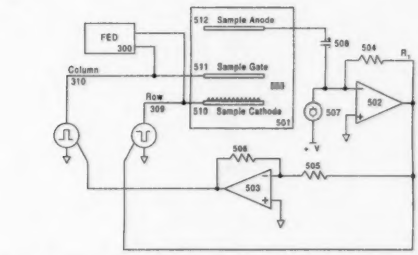
METHOD AND APPARATUS FOR BRIGHTNESS CONTROL IN A FIELD EMISSION DISPLAY

Ronald L. Hansen, San Jose, and Christopher J. Spindt, Menlo Park, both of Calif., assignors to Candescent Technologies, Corp., San Jose, Calif.

Filed Nov. 12, 1997, Appl. No. 969,073

Int. Cl.[6] G09G *3/22*

U.S. Cl. 345—74 **20 Claims**



1. An apparatus to compensate a panel display for brightness variations during operation, the apparatus comprising:

a panel display wherein the panel display is a flat panel field emission display (FED) comprising a resistor layer electrically connected to row electrodes;

a sample display circuit having substantially similar operating characteristics as the panel display, wherein the sample display circuit comprises: a sample cathode; emitters; a sample gate; and a sample anode and wherein the sample cathode comprises: sample row electrodes; and a sample resistor layer;

an error adjusting circuit receiving a performance indication signal from the sample display circuit, the error adjusting circuit determining a difference signal from the performance indication signal and a reference signal, the error adjusting circuit providing the difference signal to the panel display and the sample display circuit; and

an inverting circuit receiving the difference signal from the error adjusting circuit, the inverting circuit inverting the polarity of the difference signal, and providing the inverted difference signal to the panel display and the sample display circuit, wherein the difference signal and the inverted difference signal are for driving row lines and column lines of the panel display to compensate for brightness variations.

5,910,793

METHOD AND APPARATUS FOR ENHANCING THE SELECT/NONSELECT RATIO OF A LIQUID CRYSTAL DISPLAY

Daniel Rogovin; Tsae-Pyng Janice Shen, both of Thousand Oaks, and Yuval Fisher, Del Mar, all of Calif., assignors to Rockwell International Corporation, Costa Mesa, Calif.

Filed Nov. 1, 1996, Appl. No. 743,378

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—100 **4 Claims**

1. A method for driving a liquid crystal display panel to display an image comprising the steps of:

a. reading information signals representing an image to be displayed;

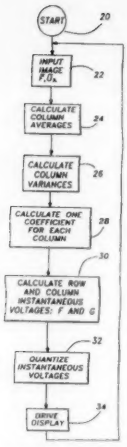
b. modifying the information signals to maximize the select/nonselect ratio,

c. calculating column voltage averages for all column lines of a liquid crystal display panel;

d. calculating column voltage variances for all the column lines of the liquid crystal display panel;

e. calculating the coefficients for each of the column lines of the liquid crystal display panel;

f. specifying instantaneous voltages for all row lines of the liquid crystal display panel and calculating instantaneous volt-



ages for all of the column lines of the liquid crystal display panel using the column voltage averages, the column voltage variances and the column coefficients wherein a total instantaneous voltage across a pixel at an intersection of a J^{th} column line and an I^{th} row line at a time t_K is defined by an equation

$$V_{I,J}(t_K)=F_I(t_K)-G_J(t_K)$$

$G_J(t_K)$ is the column drive voltage wave form applied to the J^{th} column line defined by an equation

$$G_J(t_k)=\left(a_{I,J}+\frac{\langle V_{I,J}^2\rangle}{F^2}\right)R(t_k)-\frac{\sum_{M=1}^{N}\langle V_{J,M}^2\rangle F_M(t_k)}{F^2}$$

$F_M(t_K)$ is a set of orthogonal functions defined on a collection of equal time intervals $t_1, t_2, \ldots, t_M$, $M=2^q>N$, where q is an integer and N is equal to the number of the row lines in said panel, the variables $a_{J,M}$ are a set of real coefficients, F is a constant and is optimized to increase the select/nonselect ratio; and g. quantizing and applying the instantaneous voltages to all of the row lines and all of the column lines of the liquid crystal display panel simultaneously to generate a display of the image.

5,910,794

METHOD AND APPARATUS FOR STORING AND ROTATING BIT PATTERNS

Claus Schneider, München, Germany, assignor to Océ Printing Systems GmbH, Poing, Germany

PCT No. PCT/DE95/00660, § 371 Date Jan. 30, 1997, § 102(e) Date Jan. 30, 1997, PCT Pub. No. WO96/02915, PCT Pub. Date Feb. 1, 1996

PCT Filed May 18, 1995, Appl. No. 776,558

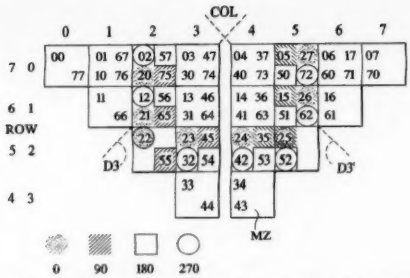
Claims priority, application Germany, Jul. 13, 1994, 44 24 734

Int. Cl.[6] **G09G** *5/34*

U.S. Cl. 345—126 **8 Claims**

1. A method for storing and rotating bit patterns in a raster module that includes a memory matrix that contains a plurality of matrix cells and can be coupled to a reproduction means via peripheral selection elements, comprising the following method steps:

storing a bit pattern present in the form of pixels of an original matrix such that at least one pixel of the original matrix is stored in each matrix cell of the memory matrix; and



reading the bit pattern out from the memory matrix, whereby specific matrix cells are selected dependent on a rotation information and respectively one pixel within these matrix cells is selected with an internal selection element and read out to the reproduction means.

5,910,795

DIGITAL IMAGE SIGNAL PROCESSING

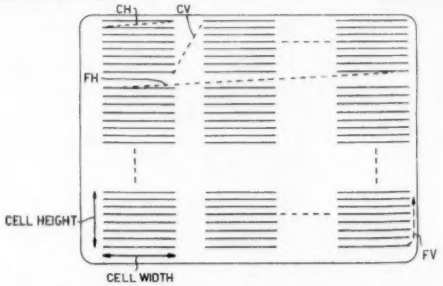
James Robert Whittaker, Kings Langley, United Kingdom, assignor to VideoLogic Limited, Hertfordshire, United Kingdom

Filed Nov. 14, 1994, Appl. No. 339,123

Claims priority, application United Kingdom, Nov. 15, 1993, 9323529

Int. Cl.[6] **G09G** *5/00*

U.S. Cl. 345—127 **15 Claims**



9. A method of scaling a raster scanned digital image for display comprising the step of:

reading image data from an off-screen store which contains the raster scanned image in a succession of image cells, each image cell having a horizontal width smaller than the horizontal width of the raster scanned image;

storing lines of image data from each image cell, the number of lines stored being at least one and fewer than the total number of lines forming each image cell, the number being dependent on the number required to be simultaneously available to perform a scaling operation;

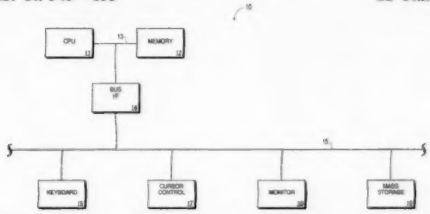
combining a plurality of pixel data contained within said stored lines of image data of each image cell, in dependence on the scaling operation, to produce pixel data of an output image;

writing pixels of the output image to an image display store.

5,910,796
MONITOR GAMMA DETERMINATION AND CORRECTION

Michael J. Gormish, Los Altos, Calif., assignor to Ricoh Corporation, Menlo Park, Calif., and Ricoh Company, Ltd., Tokyo, Japan

Filed May 20, 1996, Appl. No. 650,478
Int. Cl.[6] G09G *5/04*
U.S. Cl. 345—153 **22 Claims**



1. A method of enabling gamma correction to be performed for a display device, the display device having an input/output response characterized by a gamma, the display device capable of displaying color images using at least three color components, the method comprising the steps of:

causing the display device to display a first image, the first image characterized by a substantially constant intensity for each of a first two color components of the three color components, the first image further characterized by a substantially linear scale of intensity along a coordinate axis for a third color component of the three color components;

causing the display device to display a second image, the second image characterized by a substantially constant intensity for each of the first two color components, the second image further characterized by a substantially constant average intensity for the third color component, wherein the second image has an overall color;

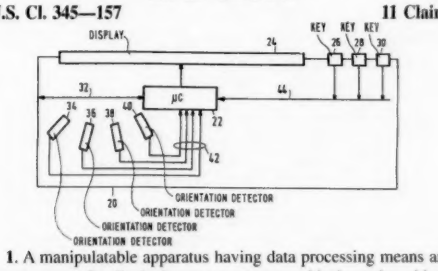
receiving a user input specifying a location on the first image at which the first image appears to match the overall color of the second image; and

determining an estimate of the gamma based on the location on the first image specified by the user input.

5,910,797
PORTABLE DATA PROCESSING APPARATUS PROVIDED WITH A SCREEN AND A GRAVITATION-CONTROLLED SENSOR FOR SCREEN ORIENTATION

Leonardus G. M. Beuk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1996, Appl. No. 601,140
Claims priority, application European Pat. Off., Feb. 13, 1995, 95200338
Int. Cl.[6] G09G *5/08*
U.S. Cl. 345—157 **11 Claims**

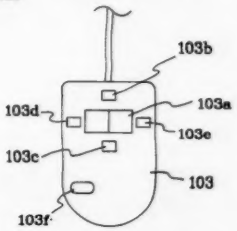


1. A manipulatable apparatus having data processing means and screen means for displaying one or more graphical or other objects presented by said data processing means, a gravitation-controlled sensor integrated with said screen means and feeding said data processing means for measuring an acceleration of said screen means induced by user manipulation of the screen means, wherein said data processing means have programmed calculating means for under control of a screen motion sensed by said sensing means imparting an acceleration based motion pattern to a predetermined selection among said objects.

5,910,798
APPARATUS FOR MOVING A CURSOR ON A SCREEN

Yang-Hoon Kim, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Nov. 25, 1997, Appl. No. 978,153
Claims priority, application Rep. of Korea, Nov. 27, 1996, 96-58117
Int. Cl.[6] G09G *5/08*
U.S. Cl. 345—163 **5 Claims**



1. An apparatus for moving a cursor on a display screen, comprising:

a first device for activating movement of the cursor from one position to another on the display screen by a first distance;

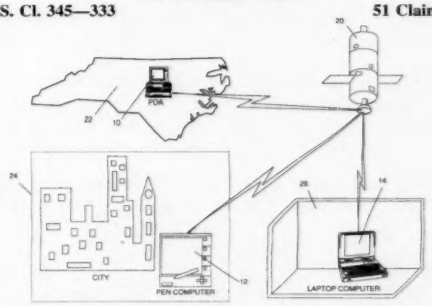
a second device for activating the movement of the cursor by a second distance smaller than the first distance when said second device is activated, wherein said second device includes one or more members, each member corresponding to a different direction of the movement of the cursor; and

a third device for activating said second device in a predetermined time interval, said third device including means for setting said predetermined time interval.

5,910,799
LOCATION MOTION SENSITIVE USER INTERFACE

Mark Alan Carpenter; David Bruce Lection, both of Raleigh, and Mark Edward Molander, Cary, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 9, 1996, Appl. No. 629,716
Int. Cl.[6] G06F *13/00*
U.S. Cl. 345—333 **51 Claims**



1. A method of providing a user interface environment for a portable data processor, the method comprising the steps of:

acquiring a geographic location of the portable data processor;

selecting a user interface environment associated with the acquired location of the portable data processor; and

activating the selected user interface environment as the user interface environment of the portable data processor wherein the user interface environment comprises a graphical user interface environment having icons associated with software

applications and wherein said selecting step comprises selecting a preselected group of application icons associated with the acquired location of the portable data processor as the user interface environment associated with the acquired location of the portable data processor and wherein said activating step comprises incorporating in the graphical user interface the selected preselected group of application icons associated with the acquired location of the portable data processor.

5,910,800

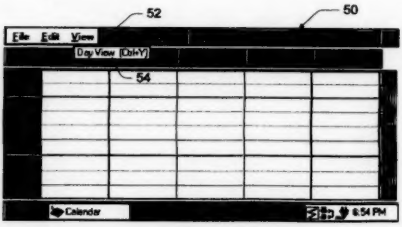
USAGE TIPS FOR ON-SCREEN TOUCH-SENSITIVE CONTROLS

Kevin Timothy Shields, Redmond, and Jossef Goldberg, Seattle, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 11, 1997, Appl. No. 873,056

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—336 **19 Claims**



1. For an information processing device having a touch-sensitive display, an operating system embodied on a computer-readable medium to provide a graphical user interface environment having one or more controls that can be activated by touching the display over said controls, wherein the operating system is configured to present a usage tip relating to a particular on-screen control when a user touches the display over said control for a predefined duration; and wherein the operating system activates the on-screen control if the user stops touching the display without moving away from the on-screen control.

5,910,801

MECHANISM FOR FINE-GRAINED AND COARSE-GRAINED CONTROL OF ZOOMING IN A DISPLAY OF A ONE-DIMENSIONAL DATA SET

Bryan Savoye Rosenburg, Cortlandt Manor; Tova Roth, Far Rockaway, both of N.Y.; Michael Hadley Skelton, Austin, and James Hoyet Summers, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application No. 08/502,520, Jul. 14, 1995, Pat. No. 5,790,819. This application Aug. 28, 1997, Appl. No. 924,062.

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—339 **8 Claims**

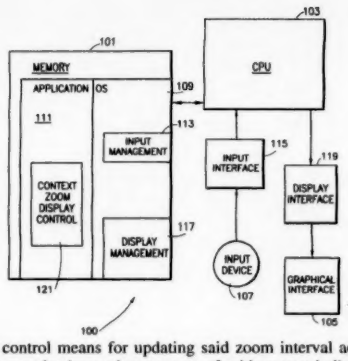
1. A system for providing control over the selection of a zoom interval of a data set for display comprising:

a context display for displaying a representation of said data set;

a zoom display for displaying a representation of a zoom interval within said data set;

a context indicator that indicates one of a start point and end point of said zoom interval within said context display;

a zoom indicator, corresponding to said context indicator, that indicates said one of a start point and end point of said zoom interval within said zoom display; and



zoom control means for updating said zoom interval according to user selection and movement of said context indicator and said zoom indicator to a new location within said context display and said zoom display, respectively.

5,910,802

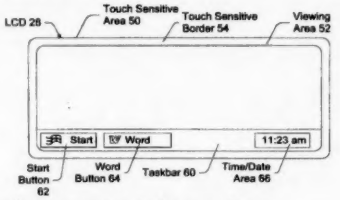
OPERATING SYSTEM FOR HANDHELD COMPUTING DEVICE HAVING TASKBAR AUTO HIDE

Kevin Timothy Shields; Raymond A. Manning, both of Redmond, and Anthony Kitowitz, Kirkland, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 11, 1997, Appl. No. 873,052

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—347 **18 Claims**



1. A handheld computing device comprising:

a processor;

a touch-sensitive display having a touch-sensitive area superimposed on a viewing area, the touch-sensitive area extending beyond the viewing area to form a border outside of the viewing area but within the touch-sensitive area; and

an operating system executing on the processor to provide a graphical user interface environment that presents a taskbar within the viewing area in response to contact in the border.

5,910,803

NETWORK ATLAS MAPPING TOOL

Stephen H. Grau, Pleasanton, and Stephen Bostock, Morgan Hill, both of Calif., assignors to Novell, Inc., Orem, Utah

Filed Aug. 14, 1996, Appl. No. 696,681

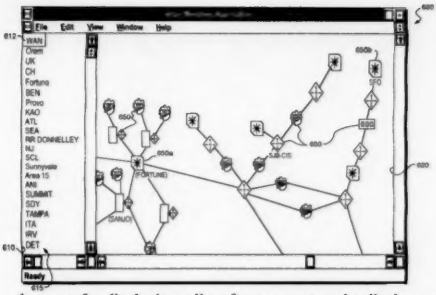
Int. Cl.[6] G06F *3/14;11/30*

U.S. Cl. 345—357 **11 Claims**

1. A network mapping tool comprising:

a management server for organizing topology data of an internetwork computing system as an atlas of maps on a network topology database; and

an atlas viewer interacting with the management server to display selected maps of the atlas on a specialized viewer window of a computer screen in a variety of views that facilitate comprehension of logical relationships between various components of the system, the viewer window comprising a



browser for displaying a list of map names and a display pane for graphically displaying the contents of a selected map on the screen;

wherein said atlas viewer also interacts with said management server so as to permit user editing of said selected map in said display pane by user manipulation of the graphically-displayed contents using a pointing device, and so as to permit visual highlighting of at least certain of the graphically-displayed contents of said selected map to indicate areas where specific protocols are routed.

5,910,804

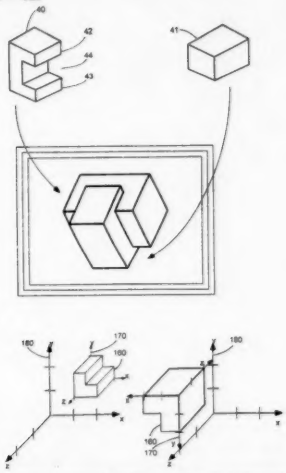
OLE FOR DESIGN AND MODELING

Mark D. Fortenbery, Fayetteville, Tenn.; Cameron M. Stubbs, Decatur, Ala.; Dominique J. Payannet, Madison, Ala., and Robert Patience, Huntsville, Ala., assignors to Intergraph Corporation, Huntsville, Ala.

Continuation of application No. 08/378,251, Jan. 23, 1995, Pat. No. 5,682,468. This application May 12, 1997, Appl. No. 855,775.

Int. Cl.[6] G06T *15/00*

U.S. Cl. 345—419 **52 Claims**



1. In a computer system having an object-oriented environment and a computer readable memory, a method for invoking software objects comprising the steps of:

creating an object server in the computer readable memory within a software application program, the object server including data describing an object, an implementation of a two-dimensional interface having two-dimensional interface methods, and an implementation of a three-dimensional interface having three-dimensional interface methods, the software application program serving as an object container for the object server; and

invoking at least one of the three-dimensional interface methods of the object server with the object container.

5,910,805

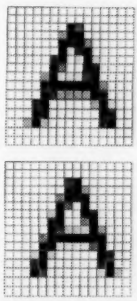
METHOD FOR DISPLAYING BITMAP DERIVED TEXT AT A DISPLAY HAVING LIMITED PIXEL-TO-PIXEL SPACING RESOLUTION

Thomas B. Hickey, Columbus, Ohio, and Robert J. Haschart, White Bear Lake, Minn., assignors to OCLC Online Computer Library Center, Dublin, Ohio

Filed Jan. 11, 1996, Appl. No. 584,408

Int. Cl.[6] G06F *3/14*

U.S. Cl. 345—467 **21 Claims**



1. A method for generating typeset characterized text, at a platform display exhibiting limited display pixel-to-display pixel spacing resolution, said text having a predetermined font of characters of select character pixel defined font type and font size, and said text being conveyed from a server to client software at said platform, comprising the steps of:

I. providing an image font file as a compressed bit map representation of each of said characters of said font, derived as a compressed character image template corresponding with a font size representing an expansion factor, F, based scaling of said predetermined font select size;

II. providing a device independent typesetting specification file for said text and said predetermined font of characters such typesetting specification representing the ideal location of each character of said text at a display;

III. conveying said image font file and said typesetting specification file to said client software; and

IV. at said platform:

(a) determining any positional error from said typesetting specification file and said display pixel-to-display pixel spacing resolution said positional error being derived with respect to said ideal location for each character of said text when located at the nearest display pixel available at said display,

(b) determining for a text character whether said error is greater than a predetermined portion of said pixel-to-pixel spacing,

(c) accessing said image font file for said compressed character image template corresponding with said text character,

(d) shifting said compressed character image template in a predetermined direction an amount representing at least one character image template pixel when said determination (b) is that said error is greater than said predetermined portion of said spacing,

(e) filtering and scaling said compressed character image template to derive an anti-aliased display character of said select font size,

(f) displaying said display character at said platform display, and

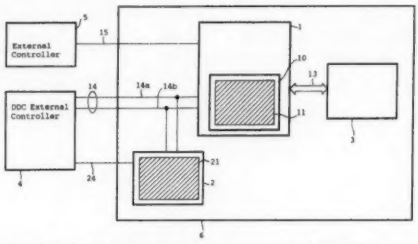
(g) reiterating steps (a) through (f) for characters of said text.

5,910,806

VIDEO DISPLAY APPARATUS

Yoshihisa Narui, Saitama; Motoki Ouchiyama, Tokyo, and Yoko Yagi, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1996, Appl. No. 744,753
Claims priority, application Japan, Nov. 6, 1995, 7-287548
Int. Cl.[6] G06F *13/00*
U.S. Cl. 345—508 **9 Claims**



1. A video display apparatus for communicating with first and second external controllers, wherein at least two communication modes exist between said video display apparatus and said first and second external controllers, said video display apparatus comprising:

microcontroller means for receiving commands from said first and second external controllers;

first non-volatile memory means for storing data relating to said video display apparatus;

first bus line means for connecting said first external controller with said microcontroller means and said first non-volatile memory means;

backup second non-volatile memory means for storing a same data relating to said video display apparatus as that stored in said first non-volatile memory means; and

internal bus line means for connecting said backup second non-volatile memory means with said microcontroller means, wherein

said data stored in said backup second non-volatile memory means is read by one of said first and second external controllers by way of said microcontroller in a backup mode of said at least two communication modes, and

said data stored in said first non-volatile memory means is read directly by said first external controller in a second mode of said at least two communication modes.

5,910,807

METHOD OF DRAWING FIGURE SUCH AS POLYGON AND DISPLAY CONTROL DEVICE

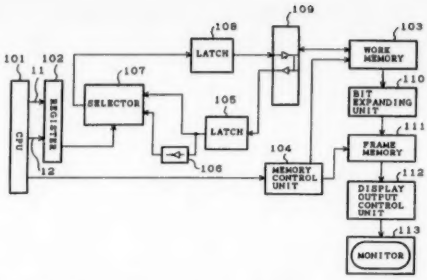
Naoki Ueda; Tadayuki Noguchi; Shuji Sakai; Kuniaki Tanaka, all of Hyogo, and Yoshiaki Kittaka, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, both of Japan

Filed Feb. 24, 1997, Appl. No. 804,506
Claims priority, application Japan, Aug. 9, 1996, 8-211515
Int. Cl.[6] G09G *5/36*
U.S. Cl. 345—515 **6 Claims**

1. A method of determining the inside of a figure of plane geometry having a contour such as a polygon, comprising steps of:

initializing a single bit plane comprised of a plurality of memory bits each for storing one-bit data of each of a plurality of pixels;

scanning each of a plurality of raster scan lines and searching for at least one pixel which can be assumed to form a line segment which partially constructs the contour of the figure so as to invert the one-bit data of the pixel and also the one-bit data of pixels running behind the former pixel in a direction of raster scanning;



writing the inverted one-bit data of these pixels into corresponding ones of said plurality of memory bits in the single bit plane sequentially;

scanning again each of the plurality of raster scan lines and searching for at least another pixel which can be assumed to form another line segment which partially constructs the contour of the figure so as to invert the one-bit data of the other pixel unless the one-bit data of the other pixel has been already inverted, and further the one-bit data of pixels running behind the other pixel in the direction of raster scanning; and

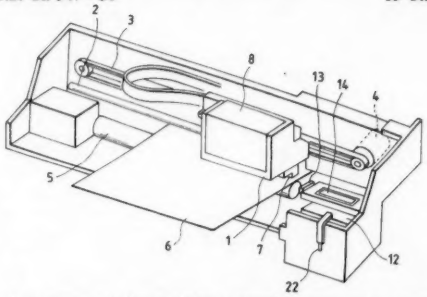
writing the inverted one-bit data of these pixels into corresponding ones of said plurality of memory bits in the single bit plane sequentially.

5,910,808

PUMP UNIT INCLUDING PUMP FRAME, PUMP WHEEL AND PULLEY AND METHOD FOR USING THE PUMP UNIT TO SQUEEZE A TUBE FOR SUCKING INK FROM A NOZZLE OPENING IN A RECORDING HEAD

Shigenori Fukasawa; Masahiro Isono; Kazuhisa Kawakami; Seiji Mochizuki; Nobuhito Takahashi, and Atsushi Kobayashi, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 23, 1996, Appl. No. 651,256
Claims priority, application Japan, May 25, 1995, 7-151010
Int. Cl.[6] B41J *2/165*
U.S. Cl. 347—30 **15 Claims**



1. A pump unit for applying a negative pressure to a capping device which covers a nozzle opening of a recording head of an ink jet recording apparatus, said pump unit comprising:

a pump frame having a tube supporting surface which positions a portion of a tube in a curved manner to form a substantially semicircular shaped portion of the tube;

a pump wheel rotated by a driving force received from a paper feed motor;

at least one pulley, rotatably mounted on said pump wheel to squeeze the substantially semicircular shaped portion of the tube in said frame when said pump wheel is driven in a first direction, a contact angle at which said at least one pulley contacts said tube is less than 180°; and

at least one elastic damper sheet which is disposed in said pump frame in opposition to said tube supporting surface and pro-

trudes radially inward from a peripheral portion of said pump frame so as to abut against and position said at least one pulley along said pump wheel to enable said at least one pulley to contact the tube when said pump wheel is driven in said first direction.

5,910,809

DROP-ON-DEMAND INK-JET PRINTING HEAD

Minoru Usui; Haruhiko Koto; Haruo Nakamura; Yozo Shimada, and Tomoaki Abe, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

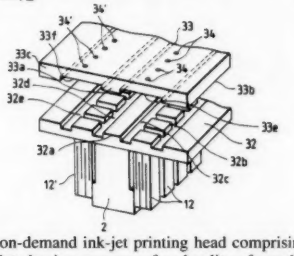
Continuation of application No. 08/136,049, Oct. 14, 1993, Pat. No. 5,444,471, which is a continuation of application No. 07/657,910, Feb. 20, 1991, abandoned. This application Feb. 24, 1995, Appl. No. 393,920.

Claims priority, application Japan, Feb. 23, 1990, 2-4074; Nov. 30, 1990, 2-337278

This patent is subject to a terminal disclaimer

Int. Cl.[6] **B41J** *2/045*

U.S. Cl. 347—72 **23 Claims**



1. A drop-on-demand ink-jet printing head comprising:

a nozzle plate having an array of a plurality of nozzle apertures;

an array of a plurality of piezoelectric elements arranged at regular intervals and each fixed on one end thereof to a base, another end of each of said piezoelectric elements being a free end which is in opposition to a respective one of said nozzle apertures; and

ink reservoir portions formed between said nozzle apertures and each said free end of said piezoelectric elements,

wherein said plurality of piezoelectric elements comprises a lamination of multiple piezoelectric material layers and multiple conductive layers alternately stacked, the lamination being fired to provide a piezoelectric plate, and the plate being fixed at one end thereof to said base and cut at predetermined widths to provide said plurality of piezoelectric elements, and

wherein conductive members are disposed at least on an end surface of said fixed end and an end surface of said free end of each of said piezoelectric elements such that application of an electric signal between predetermined conductive members produces an axial expansion in the piezoelectric element disposed between the predetermined conductive members.

5,910,810

INK JET PRINTING SYSTEM

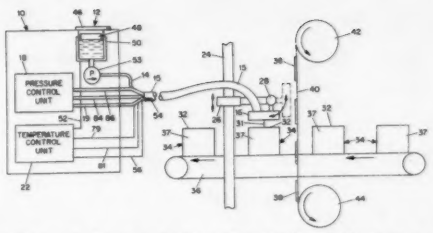
Jeffrey B. Brooks, Keene, N.H.; Charles W. Spehrley, Jr., White River Junction, Vt.; Steven H. Barss, Wilmot Flat; Edward R. Moynihan, West Lebanon, both of N.H.; Nathan P. Hine, South Strafford, Vt., and David W. Gailus, Merrimack, N.H., assignors to Markem Corporation, Keene, N.H.

Division of application No. 08/057,091, May 4, 1993, Pat. No. 5,489,925. This application Nov. 13, 1995, Appl. No. 556,255.

Int. Cl.[6] **B41J** *2/175*

U.S. Cl. 347—88 **3 Claims**

1. A hot melt ink jet printing system comprising printhead means having a plurality of orifices for selectively ejecting drops of hot melt ink toward an adjacent surface to produce a desired pattern, reservoir means in the printhead means for holding a supply of ink to be ejected by the printhead means, ink passage means connecting the reservoir means to the orifices in the printhead means to supply ink thereto, remote ink supply means for maintaining a supply of hot melt ink in liquid condition, supply conduit means connecting the remote ink supply means to the reservoir means in the printhead means, first heater means for heating the ink in the ink passage means, second heater means for heating the ink in the reservoir means, third heater means for heating the ink in the supply conduit means, and fourth heater means for heating the ink in the remote ink supply means, and temperature control means for maintaining the temperature of the ink in the ink passage means during operation at a temperature sufficient to provide ink viscosity appropriate for ejection of the ink through the orifices, for maintaining the temperature of the ink in the reservoir means during operation at a temperature below the temperature of ink in the ink passage means and for maintaining the temperature of the ink in the supply conduit means and the remote ink supply means during operation at temperatures above the melting point of the ink but below the temperature of the ink in the reservoir means to prevent high-temperature degradation thereof while permitting transfer of ink from the remote ink supply means through the supply conduit means to the reservoir means.



5,910,811

SHEET CONVEY APPARATUS

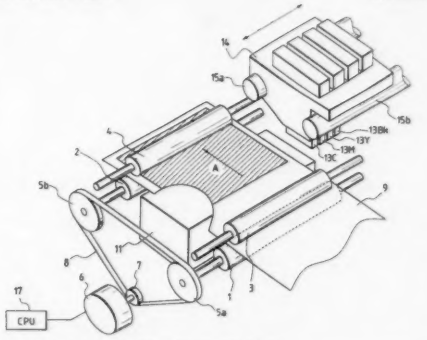
Osamu Sato, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1995, Appl. No. 497,467

Claims priority, application Japan, Jul. 4, 1994, 6-152082; Jun. 13, 1995, 7-146237

Int. Cl.[6] **B41J** *2/01*

U.S. Cl. 347—104 **30 Claims**



1. A sheet convey apparatus comprising:

a first convey means for pinching and conveying a sheet; and

a second convey means disposed at a downstream side of said first convey means and adapted to pinch and convey the sheet;

wherein when an elongation of the sheet generated between said first and second convey means is t, a convey amount of said first convey means is **L1** and a convey amount of said second convey means is **L2**, a relation of $L2 \geqq L1+t$ is satisfied.

5,910,812

TEXTILE PRINTING METHOD AND PRINTED TEXTILE OBTAINED THEREBY

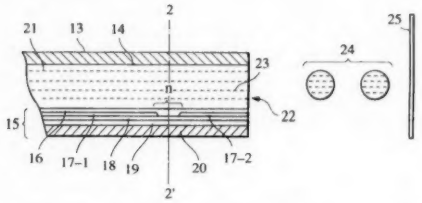
Tomoya Yamamoto, Kawasaki; Masahiro Haruta, Tokyo; Shoji Koike, Yokohama; Koromo Shirota, Kawasaki; Aya Takaide, Yokohama, and Mariko Suzuki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1995, Appl. No. 499,654

Claims priority, application Japan, Jul. 21, 1994, 6-169435; Jan. 9, 1995, 7-001293

Int. Cl.[6] B41J *3/407*

U.S. Cl. 347—106 **10 Claims**



1. A method of printing on a cloth containing fibers employing a disperse dye in an ink-jet process using at least a first color ink, a second color ink, and a third color ink, said inks including a disperse dye, comprising the steps of:

(a) forming a color mixture portion by applying at least said first, said second, and said third color inks to the cloth so that said first, said second, and said third color inks are partly overlapped;

(b) fixing a dye to the cloth by heat treating the cloth on which said color mixture portion is formed; and

(c) washing the cloth to remove at least a portion of any of the dye which has not been fixed from the cloth;

wherein said first, said second, and said third color inks contain a total of at least four disperse dyes.

5,910,813

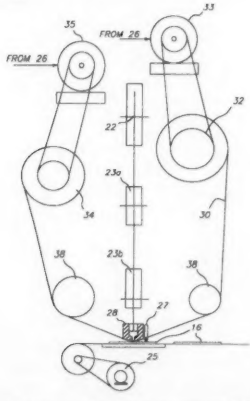
ACCURATELY LOCATING COLOR DONOR ELEMENT IN MAKING COLOR FILTER ARRAYS

Werner Fassler, Rochester; Charles D. DeBoer, Palmyra, and James E. Pickering, Holcomb, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1997, Appl. No. 846,692

Int. Cl.[6] B41J *25/308*

U.S. Cl. 347—215 **4 Claims**



1. Apparatus having a print head for transmitting energy to a colorant donor element, the energy causing colorant from the colorant donor element to transfer to an image receiving layer to produce a color filter array, the image-receiving layer having an image-receiving surface comprising:

a) means for locating the colorant donor element gap and the image-receiving layer a precise sublimation gap G from the image-receiving layer surface during transfering the colorant donor element to the image-receiving layer,

b) means for maintaining the sublimation gap G to compensate for dimensional variations in the image-receiving layer; and

c) wherein the sublimation gap maintaining means includes sensing means for producing an electrical signal which is proportional to the variations in the sublimation gap G and further including means for positioning the print head in accordance with the electrical signal to maintain the sublimation gap thereby compensating for the dimensional variations in the image-receiving layer.

5,910,814

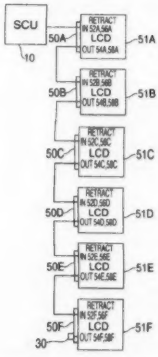
INTERFACE FOR LIQUID CRYSTAL DISPLAY RETRACT DEVICE

John Portman, Anahiem; Loi Ninh, Foothill; Garry Tillyer, Mission Viejo; Gerald Lester, Costa Mesa, and John Newman, Mission Viejo, all of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Transcom, Inc., Irvine, Calif.

Filed Mar. 29, 1996, Appl. No. 625,472

Int. Cl.[6] H04N *7/08*

U.S. Cl. 348—8 **5 Claims**



1. An in-flight entertainment system comprising:

a plurality of liquid crystal display (LCD) retract units mountable in a passenger service unit of aircraft, each of said plurality of LCD retract units including an input connector and an output connector, signals provided to said input connector appearing at said output connector;

a system control unit first configurable to provide video, power and control signals independently to said input connector of each of said plurality of LCD retract units and second configurable to provide video, power and control signals to said input connector of only a first of said plurality of LCD retract units wherein said input and output connectors of successive LCD retract units are connected in a daisy chain fashion in said second configuration.

5,910,815

TELEPHONE SET

Alain Boursier, and Louis Giron, both of Le Mans, France, assignors to U.S. Philips Corporation, New York, N.Y.

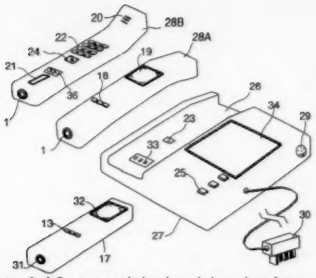
Filed Sep. 6, 1995, Appl. No. 523,838

Claims priority, application France, Sep. 13, 1994, 94 10908

Int. Cl.[6] H04N *7/14*

U.S. Cl. 348—14 **11 Claims**

1. A telephone set comprising:



a part intended for transmitting/receiving signals, connected to a telephone line, including means for transmitting a picture over the telephone line;

one or more detachable parts, which collectively include a picture sensor, a microphone and an earphone, and which collectively communicate with the part connected to the telephone line;

wherein:

the detachable part including the picture sensor comprises a converter for digitizing a picture signal coming from the picture sensor and a picture memory for locally storing at least one complete digitized picture, and

the part connected to the telephone line has a specialized link to the detachable part which includes the picture sensor for the delayed transmission of a still picture from the detachable part which includes the picture sensor to the part connected to the telephone line, a screen and means for storing and displaying on this screen a still picture extracted via said special link from the picture memory of the detachable part which includes the picture sensor, and means for transmitting such a still picture over the telephone line.

5,910,816

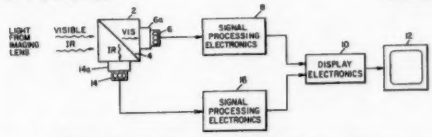
IMAGING SYSTEM WITH INDEPENDENT PROCESSING OF VISIBLE AN INFRARED LIGHT ENERGY

Mark G. Fontenot, Lafayette, La.; Richard Feinberg, Bellingham, Wash., and Howard Katz, Potomac, Md., assignors to Stryker Corporation, Santa Clara, Calif.

Continuation-in-part of application No. 08/472,785, Jun. 7, 1995, abandoned. This application Jun. 7, 1996, Appl. No. 663,015.

Int. Cl.[6] H04N *07/18*

U.S. Cl. 348—65 **36 Claims**



1. A method of protecting body members from damage during surgery or other invasive body procedures from accidental trauma by producing images of the body members in the surgical site in a first spectrum and producing images in the surgical field of the body members to be protected that are not physically in the surgical field and are hidden therefrom in a second spectrum and processing the images of one of said spectra differently from the images of the other of said spectra comprising the steps of

illuminating the surgical site to produce visible images in a first spectrum,

causing images in a spectrum not visible to the human eye to be emitted by the body member to be protected and to appear in the surgical site,

producing images in both spectra along a common optical path,

separating the images of the two spectra,

producing signals each developed from the images of a different spectrum,

processing the signals produced by the signals of at least one of the spectra to enhance its image, and

selectively displaying the images representative of the two spectra.

5,910,817

OBJECT OBSERVING METHOD AND DEVICE

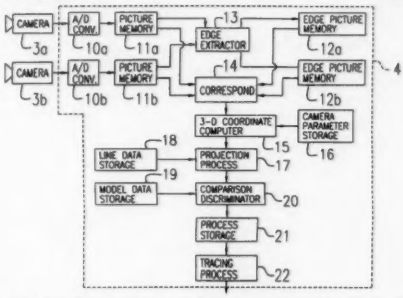
Katsumi Ohashi, Otsu, and Masatoshi Kimachi, Katano, both of Japan, assignors to Omron Corporation, Kyoto, Japan

Filed May 17, 1996, Appl. No. 651,339

Claims priority, application Japan, May 18, 1995, 7-145546

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—159 **15 Claims**



1. A object observing method for observing an object comprising

a first step of simultaneously taking a picture by two or more cameras directed toward a predetermined observation position to extract a characteristic portion in each of the respective taken pictures,

a second step of corresponding said extracted characteristic portion in the picture to the pictures,

a third stop of measuring said corresponded characteristic portion in three-dimensions to extract its three-dimensional coordinates,

a fourth step of projecting the three-dimensional coordinates of said extracted characteristic portion on a virtual perpendicular plane vertically positioning on a plane contacting said object, and

a fifth step of comparing said projected data with predetermined two-dimensional model data to discriminate said object.

5,910,818

IMAGE RESTORATION SYSTEM FOR A SINGLE CHARGE COUPLED DEVICE VIDEO CAMERA

Joon-ki Paik, and Woon Na, both of Seoul, Rep. of Korea, assignors to Samasung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 10, 1996, Appl. No. 644,481

Claims priority, application Rep. of Korea, May 10, 1995, 95-11468

Int. Cl.[6] H04N *5/228*

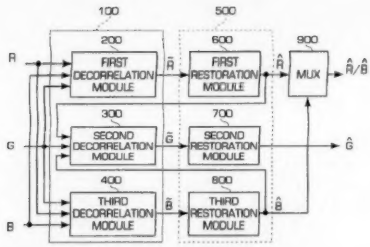
U.S. Cl. 348—222 **32 Claims**

1. An image restoration system

for a single charge coupled device color video camera comprising:

a decorrelation module for receiving degraded RGB component signals image-processed by the single charge coupled device and outputting individual RGB component signals having decorrelated color components between individual channels; and

a frequency restoration module for receiving the RGB component signals from said decorrelation module, restoring frequency components lost in channels and outputting the RGB component signals;



wherein said decorrelation module comprises:

a first decorrelation module for receiving the degraded RGB component signals, eliminating a correlation signal in the R component signal using the G and B component signals, and outputting a pure R component signal;

a second decorrelation module for receiving the degraded G component signal and the R and B component signals which are decorrelated and frequency-restored, eliminating a correlation signal in the G component signal using the decorrelated and frequency restored R and B component signals, and outputting a pure G component signal; and

third decorrelation module for receiving the degraded RGB component signals, eliminating a correlation signal in the component signal using the G and R component signals, and outputting a pure B component signal.

5,910,819

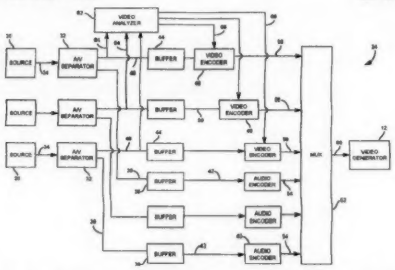
STATISTICAL MULTIPLEXER FOR RECORDING VIDEO

Chao-Kung Yang, Huntington Beach, Calif., assignor to Hughes Electronics Corporation, El Segundo, Calif.

Filed Jan. 31, 1997, Appl. No. 792,631

Int. Cl.[6] H04N *7/24;7/26*

U.S. Cl. 348—387 **18 Claims**



1. An apparatus for recording a plurality of video signals, said apparatus comprising:

a video analyzer for analyzing a first video signal and a second video signal and generating a first compression signal and a second compression signal;

a first video encoder for encoding said first video signal at a variable rate determined by said first compression signal to form a first encoded video signal;

a second video encoder for encoding said second video signal at a variable rate determined by said second compression signal to form a second encoded video signal; and

a video generator for permanently recording said first and second encoded video signals so that said first and second encoded video signals can be repeatedly broadcast from said video generator,

wherein each of said first and second encoded video signals corresponds to a movie and wherein said video generator comprises means for broadcasting said first and second encoded video signals a plurality of times in a day at predetermined times,

wherein said first video signal has a complexity which varies over time, wherein said second video signal has a complexity which varies over time, and wherein said video analyzer comprises:

a first complexity detector for generating a first complexity signal which is representative of said complexity of said first video signal;

a second complexity detector for generating a second complexity signal which is representative of said complexity of said second video signal;

means for determining a weighting factor based upon said first complexity signal and said second complexity signal; and

means for generating said first compression signal based upon said weighting factor and said first complexity signal.

5,910,820

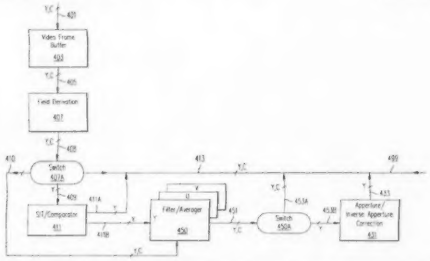
CORRECTION OF FLICKER ASSOCIATED WITH NONINTERLACED-TO-INTERLACED VIDEO CONVERSION

William S. Herz, Newark, and Jon E. Graham, San Jose, both of Calif., assignors to S3, Incorporated, Santa Clara, Calif.

Filed Mar. 25, 1996, Appl. No. 621,567

Int. Cl.[6] H04N *7/01;11/20*

U.S. Cl. 348—446 **10 Claims**



1. A noninterlaced video to interlaced video converter comprising:

a video frame buffer, said video frame buffer having an input terminal and an output terminal, said input terminal of said video frame buffer being coupled to a video source;

a video field derivator, said field derivator having an input terminal and an output terminal, said input terminal of said field derivator being coupled to said output terminal of said video frame buffer;

a first switch, said first switch having an input terminal coupled to said output terminal of said video field derivator, said first switch having a first, second, and third output terminal;

a SIT/comparator, said SIT/comparator having an input terminal coupled to said first output terminal of said first switch and first and second output terminals;

a filter/averager, a first input of said filter averager being coupled to said second output of said first switch, a second input of said filter averager being coupled to said second output of said SIT/comparator;

an output bus, said output bus being coupled to said first output terminal of said first switch, said first output terminal of said SIT/comparator also being coupled to said output bus, wherein

when said first switch is in a first state, video from said field derivator is coupled to said filter averager;

when said first switch is in a second state, video from said field derivator is coupled to said SIT/comparator; and

when said first switch is in a third state, video from said field derivator is coupled to said output bus, further wherein:

when said first switch is in said second state, said SIT/comparator compares a luminance of vertically adjacent pixels of said video from said field derivator to a predetermined threshold value and if said differential value

is less than said pre-determined threshold value, said SIT/comparator couples said video to said first output terminal of said SIT/comparator, and if said differential value is greater than said pre-determined threshold value, said SIT/comparator couples said video to said second output terminal of said SIT/comparator.

5,910,821

METHOD AND DECODER FOR THE PROCESSING OF DATA WITHIN TELETEXT PAGES

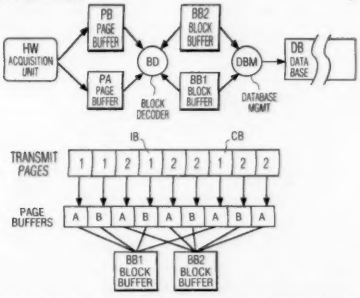
Sandor Gyarmati, Villingen-Schwenningen, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen, Germany

Filed Nov. 14, 1997, Appl. No. 970,902

Claims priority, application European Pat. Off., Nov. 19, 1996, 96118501

Int. Cl.[6] H04N *7/087*

U.S. Cl. 348—468 **9 Claims**



1. Method for the processing of data within teletext pages, wherein the data are organized in data blocks which are capable of being sized greater than a teletext page, wherein the data of the teletext pages are transmitted within two streams of pages, said method comprising the steps of:

storing the teletext pages of the two streams sequentially in at least two different page buffers,

analyzing a page stored in one of said at least two different page buffers and when the analyzed page corresponds to a block of the first stream, transferring the page to a first block buffer, and when the analyzed page corresponds to a block of the second stream transferring the page to a second block buffer, and

processing the blocks in said first and second block buffers separately.

5,910,822

DATA TRANSMISSION AND RECEIVING SYSTEM FOR MULTIPLEXING DATA WITH VIDEO DATA

Akira Yamaguchi, and Taku Kihara, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP96/00215, § 371 Date Dec. 12, 1996, § 102(e) Date Dec. 12, 1996, PCT Pub. No. WO96/24220, PCT Pub. Date Aug. 8, 1996

PCT Filed Jan. 30, 1996, Appl. No. 718,322

Claims priority, application Japan, Jan. 30, 1995, 7/13064

Int. Cl.[6] H04N *7/08*

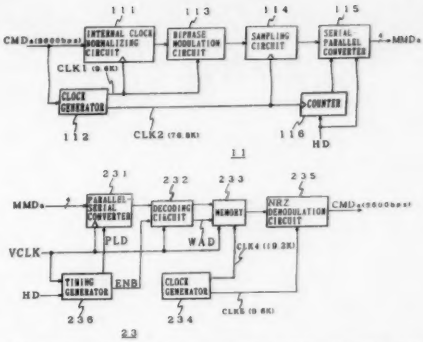
U.S. Cl. 348—476 **118 Claims**

1. A data transmission apparatus comprising:

first data inputting means for inputting serial data transmitted at a first rate;

second data inputting means for inputting video data;

data sampling means for generating resampled data by sampling said serial data input via said first data inputting means, said sampling being performed by use of a clock signal at a second rate higher than said first rate;



data extracting means for extracting a predetermined number of resampled data from the resampled data output by said data sampling means in each of preselected periods of said video data;

data multiplexing means for generating multiplexed data by multiplexing into blanking portions of said video data said predetermined number of resampled data extracted by said data extracting means; and

data outputting means for outputting said multiplexed data generated by said data multiplexing means.

5,910,823

IMAGE QUALITY CORRECTION CIRCUIT AND METHOD BASED ON COLOR DENSITY

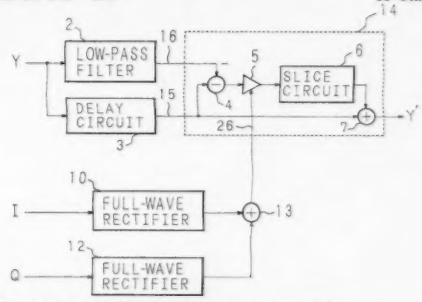
Masaaki Hanai, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of application No. 08/226,510, Apr. 12, 1994, Pat. No. 5,621,480. This application Jan. 31, 1997, Appl. No. 794,240.

Claims priority, application Japan, Apr. 19, 1993, 5-91427; Dec. 24, 1993, 5-327770; Apr. 11, 1994, 6-72319

Int. Cl.[6] H04N *5/21;5/52*

U.S. Cl. 348—630 **11 Claims**



1. An image quality correction circuit comprising:

color density detecting means for detecting color density from a signal relating to color;

high-frequency component extracting means for extracting a high-frequency component from a luminance signal;

a variable gain amplifier for amplifying the extracted high-frequency component of the luminance signal by performing control in such a manner that the gain thereof is increased when the detected color density is high, and is reduced when the detected color density is low;

a slice circuit for removing only a positive portion of the high frequency component outputted from said variable gain amplifier to prevent color drop; and

means for combining an image quality correction signal outputted from said slice circuit with the luminance signal to be corrected and thereby outputting a corrected luminance signal.

5,910,824

FRAME MEMORY FOR A MOTION PICTURE DECODER

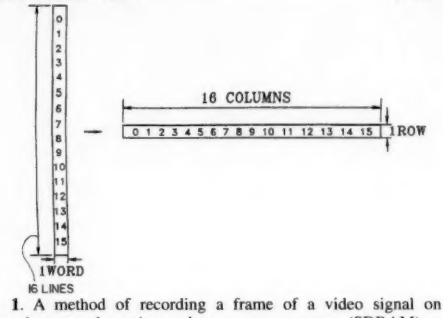
Pil-ho Yu, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 30, 1996, Appl. No. 689,070

Claims priority, application Rep. of Korea, Jul. 31, 1995, 95-23467

Int. Cl.[6] **H04N** *9/64;9/475;5/91*

U.S. Cl. 348—714 **7 Claims**



1. A method of recording a frame of a video signal on a synchronous dynamic random access memory (SDRAM) said video signal comprising a plurality of macroblocks of one word length and of 16 vertical lines, the video signal recording method comprising the step of:

disposing the 16 vertical lines of each of said plurality of macroblocks to 16 horizontal columns in the SDRAM.

5,910,825

VIDEO SIGNAL TRANSMITTING APPARATUS WITH ATTENDANT DATA INSERTION AND EXTRACTION FUNCTIONS

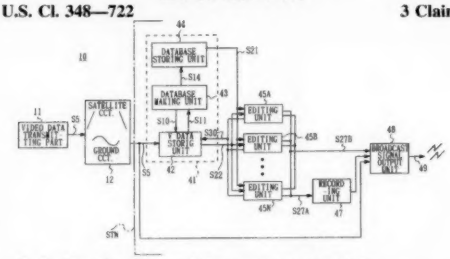
Hajime Takeuchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of application No. 08/750,859, Mar. 3, 1997. This application May 28, 1998, Appl. No. 86,211.

Claims priority, application Japan, May 9, 1995, P07-136177

Int. Cl.[6] **H04N** *7/08*

U.S. Cl. 348—722 **3 Claims**



1. A video signal transmitting apparatus comprising:

a video data transmitting unit for creating transmission blocks in one field or one frame of a video signal and forming transmission video data, said video data transmitting unit including attendant information inserting means for inserting in a blanking interval in said transmission blocks attendant information representing contents of said video signal; and

a video data receiving unit for receiving said transmission video data formed by said video data transmitting unit and reproducing said video signal, said video data receiving unit including

recording and reproducing means for recording said transmission video data received by said video data receiving unit, reproducing said video signal, and extracting only said attendant information from said transmission video data when said contents of said video signal are confirmed by a user of said video signal transmitting apparatus, and

display means for displaying said attendant information extracted by said recording and reproducing means.

5,910,826

REAR PROJECTION SCREEN AND METHOD OF PRODUCING SAME

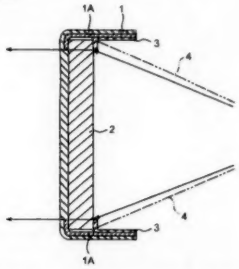
Satoshi Aoki, Kadoma, and Hiroshi Yamaguchi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 25, 1996, Appl. No. 755,631

Claims priority, application Japan, Dec. 8, 1995, 7-320174; May 13, 1996, 8-117578

Int. Cl.[6] **H04N** *5/74*

U.S. Cl. 348—781 **9 Claims**



1. A rear projection screen system comprising:

a flat plate constructed of light penetrable material, said flat plate having a periphery portion and an inner portion;

a mask placed on the periphery portion of a rear side of said flat plate, by one of printing, coating, or etching, said mask being opague;

a bottomed box-shaped container formed by bending said flat plate into a box with the rear side of said flat plate being an interior surface of said bottomed box-shaped container, and a front side of said flat plate being an exterior surface of said bottom box-shaped container so that a display screen is received within, and said mask blocking a periphery of said display screen; and

said mask is skewed on said flat plate to compensate for bending said flat plate into a bottomed box-shaped container so that said mask is linear after said bottom box-shaped container is formed.

5,910,827

VIDEO SIGNAL DECODING ARRANGEMENT AND METHOD FOR IMPROVED ERROR CONCEALMENT

Katherine W. Kwan, 1072 Wilmington Ave., San Jose, Calif. 95129, and Paul A. Voois, 1063 Morse Ave., Sunnyvale, Calif. 94089

Filed Feb. 26, 1997, Appl. No. 806,312

Int. Cl.[6] **G06F** *11/00;* **H04N** *7/68*

U.S. Cl. 348—845.1 **39 Claims**

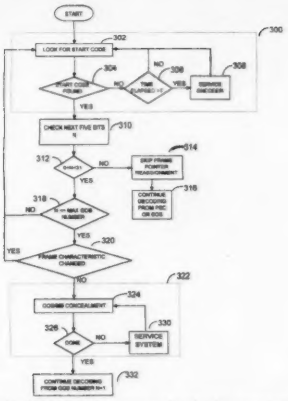
1. A video signal decoding arrangement for decoding a data stream into a series of images, the video signal decoding arrangement comprising

a data processing arrangement, configured and arranged to:

decode the data stream into a plurality of sets of image data,

identify a corrupted data segment in a current set of image data, and

replace the corrupted data segment with a replacement data segment generated as a function of a previous set of image data in response to an error detected in the data stream,



wherein the data processor selectively stores the current set of image data in a first memory or a second memory based on a first pointer.

5,910,828

FERROELECTRIC LIQUID CRYSTAL DEVICE FOR LOCAL REDUCTION OF LIGHT INTENSITY IN THE VISUAL FIELD

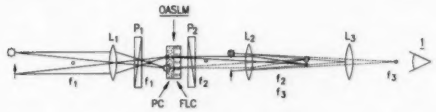
Wolfgang Dultz, Frankfurt/M., Germany; Arkadii Onokhov, St. Petersburg; Leonid Beresnev, Moscow, both of Russian Federation, and Wolfgang Haase, Reinheim, Germany, assignors to Deutsche Telekom AG, Bonn, Germany

Filed Apr. 23, 1997, Appl. No. 838,965

Claims priority, application Germany, Apr. 24, 1996, 196 16 323

Int. Cl.[6] G02F *1/135*

U.S. Cl. 349—25 **10 Claims**



1. A device for the local reduction of light intensity in visual fields, the device comprising:

a compound lens having at least one lens and two polarizers;

an optically addressed spatial light modulator (OASLM) arranged between the two polarizers of the compound lens, the optically addressed spatial light modulator (OASLM) having two transparent plates each with at least one electrode, a semitransparent photoconducting layer (PC), and a helix-shaped ferroelectric liquid crystal (FLC),

wherein the helix-shaped ferroelectric liquid crystal (FLC) is arranged between the two transparent plates in one of a bookshelf geometry and a deformation domain geometry, such that a helix axis of the helix-shaped ferroelectric liquid crystal (FLC) is parallel to an orientation of the two transparent plates.

5,910,829

LIQUID CRYSTAL DISPLAY DEVICE

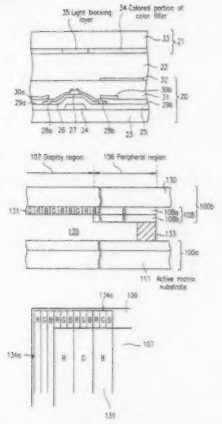
Takayuki Shimada, Yamatokoriyama; Yuzuru Kanemori, Nara; Mikio Katayama, Ikoma; Shinya Tanaka, Sakai, and Masumi Kubo, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 2, 1997, Appl. No. 867,306

Claims priority, application Japan, Jun. 4, 1996, 8-141986; Aug. 19, 1996, 8-217530

Int. Cl.[6] G02F *1/1335;1/1333*

U.S. Cl. 349—110 **31 Claims**



1. A liquid crystal display device comprising:

first and second substrates opposing each other;

a liquid crystal layer interposed between the first and second substrates;

a plurality of scanning lines and a plurality of signal lines formed on the first substrate so as to cross each other, the scanning lines and the signal lines defining a plurality of pixel regions arranged in a matrix;

a plurality of switching elements each provided in one of the pixel regions in a vicinity of an intersection of the scanning lines and the signal lines;

a color filter provided on the second substrate, the color filter including a plurality of colored portions each portion being formed of a material; and

a light blocking layer provide on the second substrate, the light blocking layer being formed of two or less of said materials that are used for the plurality of colored portions.

5,910,830

LIQUID CRYSTAL DISPLAY PANELS INCLUDING ALIGNMENT KEYS IN THE ACTIVE REGIONS THEREOF, AND METHODS FOR MANUFACTURING

Hyo-Rak Nam, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 17, 1998, Appl. No. 42,988

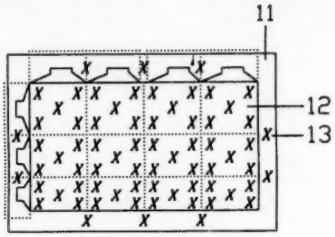
Claims priority, application Rep. of Korea, Oct. 10, 1997, 1997-51971

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 349—158 **22 Claims**

1. A liquid crystal display (LCD) panel comprising:

an array of active regions, the active regions comprising a plurality of stacked patterned layers; and



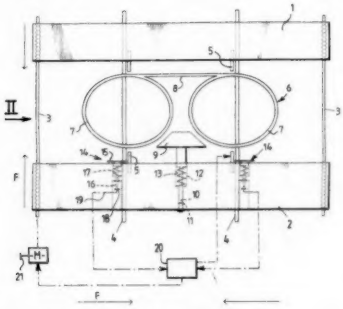
alignment keys in the active regions, for use in aligning the stacked patterned layers.

5,910,831

SPECTACLES FRAME HOLDER

Jean-Jacques Bernard Joseph Videcoq, Pavilly, and Raynald Gaston Marcel Longuet, Le Gros Theil, both of France, assignors to Briot International, Pont De L'Arche, France

Filed Oct. 2, 1997, Appl. No. 944,066
Claims priority, application France, Oct. 3, 1996, 96 12076
Int. Cl.[6] G02C *1/00*; B25B *1/24*
U.S. Cl. 351—158 **15 Claims**



1. A spectacles frame holder comprising:

a first jaw;

a second jaw, wherein at least one of said first and second jaws is slidably mounted so that said first and second jaws are capable of relative movement toward and away from each other;

means for holding a spectacles frame between said jaws in a reference plane; and

at least one sensor provided on at least one of said first and second jaws, said sensor comprising means adapted to cooperate with the spectacles frame for providing a position indicating signal upon arrival of said jaws in a predetermined position relative to the spectacles frame in the course of the relative movement of said two jaws toward each other.

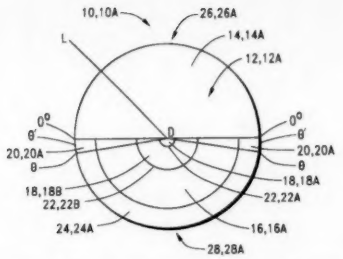
5,910,832

OPHTHALMIC NO-LINE PROGRESSIVE ADDITION LENSES

Kenneth C. Roddy, P.O. Box 990, Jenks, Okla. 74037

Continuation of application No. 08/749,995, Nov. 18, 1996, Pat. No. 5,812,237, Provisional application No. 60/007,550, Nov. 27, 1995. This application Mar. 26, 1998, Appl. No. 48,736.
Int. Cl.[6] G02C *7/06*
U.S. Cl. 351—169 **57 Claims**

1. An ophthalmic progressive addition lens comprising:



a viewing area which comprises a distance area, a near addition area, and an intermediate addition area of progressively increasing power from said distance area to said near area;

wherein said distance area is generally contained within a top portion of the lens and said intermediate and near areas are generally contained within a bottom portion thereof, said top and bottom portions are generally defined by an imaginary horizontal line extending through an optical center of the lens;

a first area between a first side of said distance area and first sides of said intermediate and near areas, said first area comprises a generally aspheric base curve;

a second area between a second side of said distance area and second sides of said intermediate and near areas, said second area comprises a generally aspheric base curve;

wherein substantially each measurable dioptric increment of at least about 0.25 diopters of addition power change in said viewing area from said distance area to said near area defines a boundary which generally curves upward toward said distance area; and

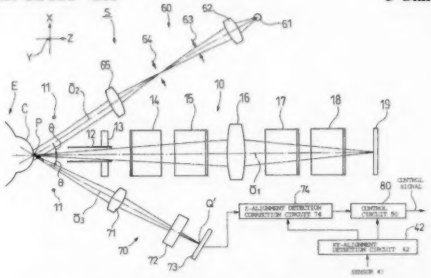
wherein said viewing area comprises a plurality of said boundaries which generally curve upward toward said distance area.

5,910,833

OPHTHALMIC INSTRUMENT

Hiroshi Iijima, Tokyo, Japan, assignor to Kabushiki Kaisha TOPCON, Tokyo, Japan

Filed Jun. 9, 1998, Appl. No. 93,607
Claims priority, application Japan, Jun. 11, 1997, 9-153594
Int. Cl.[6] A61B *3/00*
U.S. Cl. 351—208 **3 Claims**



1. An ophthalmic instrument equipped with an operating stick for performing rough alignment on a main body of the instrument against an eye to be tested, alignment detection means for detecting a state of alignment between said main body and said eye, and drive means for driving said main body on the basis of a result of detection of said alignment detection means and performing precise alignment on said main body against said eye, the ophthalmic instrument comprising:

limitation means for limiting a range in which said main body moves;

change means for changing the range limited by said limitation means;

first detection means for detecting a change operation of said change means;

second detection means for detecting that said main body is at a distance away from said eye by a predetermined value or greater;

inhibition means for inhibiting drive of said drive means when said first detection means detects the change operation of said change means; and

allowance means for allowing drive of said drive means, when said first detection means detects an end of the change operation of said change means and also said second detection means detects that said main body is at a distance away from said eye by a predetermined value or greater.

5,910,834

COLOR ON COLOR VISUAL FIELD TESTING METHOD AND APPARATUS

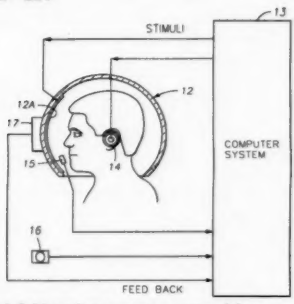
Richard J. McClure, San Diego, and R. Kemp Massengill, Poway, both of Calif., assignors to Virtual-Eye.Com, Inc., Leucadia, Calif.

Continuation-in-part of application No. 08/864,331, May 28, 1997, which is a continuation of application No. 08/700,754, Jul. 31, 1996, Pat. No. 5,864,384. This application Sep. 23, 1997, Appl. No. 936,079.

This patent is subject to a terminal disclaimer

Int. Cl.[6] **A61B** *3/02*

U.S. Cl. 351—224 **15 Claims**



1. A visual field testing apparatus, comprising:

a frame, said frame being adapted to mount in a substantially motionless relationship to the head of a patient, while allowing the head to move;

an electronic image display device mounted to said frame, said display device being constructed and positioned to display an electronic image encompassing the visual field of at least one eye of a patient wearing said frame, said image including a test stimulus, said test stimulus having its visibility enhanced by color selection;

a gaze sensing device adapted to sense the orientation of at least one eye of a patient wearing said frame; and

a computer, said computer being connected to said display device to generate said electronic image including said color-enhanced test stimulus, said computer being capable of receiving at least one signal and calculating at least one characteristic of the visual field of the patient.

5,910,835

PHOTOGRAPHIC PROCESSING APPARATUS

Hironori Masutani, Wakayama-ken, Japan, assignor to Noritsu Koki Co., Ltd, Wakayama-ken, Japan

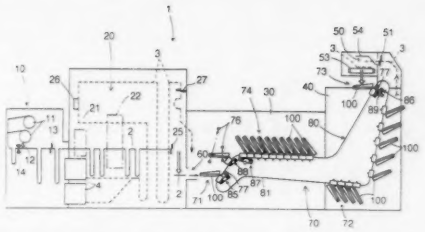
Filed Sep. 8, 1997, Appl. No. 925,305

Claims priority, application Japan, Sep. 10, 1996, 8-238821; Aug. 28, 1997, 9-232324

Int. Cl.[6] **G03B** *27/32;27/52*

U.S. Cl. 355—27 **9 Claims**

1. A photographic processing apparatus comprising:



an exposing section for printing, on printing paper, images of negative films received from a negative film feeder;

a negative film outlet for discharging said negative films used in said exposing section;

a developing section for developing said printing paper printed;

a print outlet for discharging said developed printing paper as prints by cutting said developed printing paper to a predetermined length;

a tray conveyor for receiving said negative films in one unit discharged from said negative film outlet, receiving from said print outlet said prints having images obtained from said negative films in said one unit, and combining and transporting said negative films and said prints as finished products;

negative film ID allocating means for generating a negative film ID code and allocating said negative film ID code to said negative film ID to be subject to a printing process;

print ID allocating means for allocating a print ID code to said printing paper having frame images of said negative films printed thereon in said exposing section;

tray ID allocating means for allocating a tray ID code to each tray of said tray conveyor; and

a link manager for managing a linked relationship among said negative film ID code, said print ID code and said tray ID code;

wherein said link manager is operable to manage said linked relationship among said negative film ID code, said print ID code and said tray ID code in order to identify said negative films and said prints loaded into a predetermined one of trays.

5,910,836

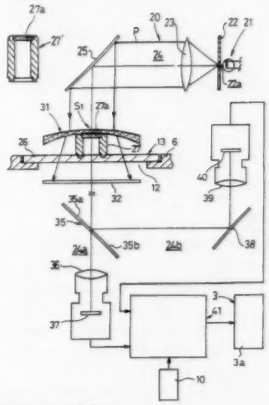
LENS METER

Yukio Ikezawa; Eiichi Yanagi; Yasufumi Fukuma, and Takeyuki Kato, all of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed Sep. 29, 1997, Appl. No. 937,184

Int. Cl.[6] **G01B** *9/00*

U.S. Cl. 356—124 **8 Claims**



1. A lens meter comprising:

a light source for generation of a measuring light beam;

a normal mode in which lens characteristic values obtained by measuring a narrow area of an eyeglass lens which corresponds to a narrow area centering an optical path of said measuring light beam are displayed;

a wide-area measuring mode in which each measuring point of a wide area of said eyeglass lens which corresponds to a wide area centering the optical path of said measuring light beam is measured and thereafter mapping display is performed;

a pattern forming plate provided in an optical path of said measuring light beam, said pattern forming plate having a central pattern for measuring the narrow area of said eyeglass lens and a plurality of peripheral patterns for measuring the wide area of said eyeglass lens;

wherein said pattern forming plate can be switched between the normal mode in which the narrow are alone is measured and resultant values are displayed based on an image of the central pattern formed by a transmitted measuring light beam which has passed through the narrow area of said eyeglass lens and the wide-area measuring mode in which a great number of images of the peripheral patterns formed by a transmitted measuring light beam which has passed through the wide area of said eyeglass lens are received and also the wide area thereof is measured and mapping display is performed;

a first lens receiving cylinder for the normal mode and a second lens receiving cylinder for the wide-area measuring mode are provided; and

a height from a support plate of said first lens receiving cylinder to a top of said first lens receiving cylinder is greater than that from a support plate of said second lens receiving cylinder to a top of said second lens receiving cylinder.

5,910,837

PHOTOMECHANICAL TRANSDUCER

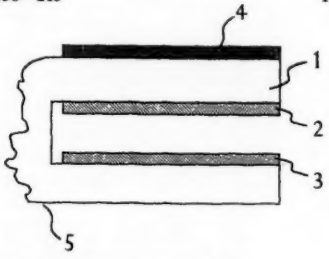
James Kazimierz Gimzewski, Rueschlikon, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 25, 1996, Appl. No. 719,812

Claims priority, application WIPO, May 24, 1994, PCT/IB96/00494

Int. Cl.[6] **G01J** *1/00*

U.S. Cl. 356—213 **18 Claims**



1. Photomechanical transducer, comprising:

a carrier element;

a photochromic element which comprises at least a first material and is attached on the carrier element, said carrier element made of a deformable second material, said first material having a property of changing its molecular shape by the absorption of incident light, thereby introducing a strain into said carrier element, said strain causing a deformation of said carrier element;

wherein said first material has the property that said deformation occurs only if said incident light has a wavelength which lies in a predetermined wavelength range.

5,910,838

METHOD OF DETERMINING CONCENTRATIONS BY MEANS OF CONTINUOUS-SPECTRUM ATOMIC ABSORPTION SPECTROSCOPY

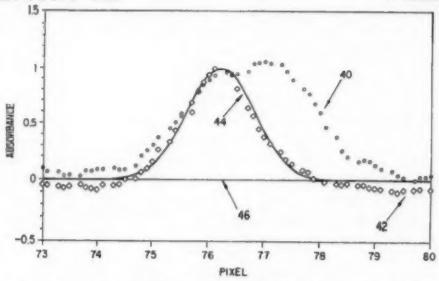
Renate Weisse, Berlin, Germany, assignor to Bodenseewerk Perkin-Elmer GmbH, Uberlingen, Germany

Filed Apr. 21, 1997, Appl. No. 840,953

Claims priority, application Germany, Apr. 19, 1996, 196 17 100

Int. Cl.[6] **G01J** *3/30*

U.S. Cl. 356—312 **9 Claims**



1. A method for determining concentrations by means of atomic absorption spectroscopy using an atomic absorption spectrometer, said spectrometer including:

a continuous source as a source of radiation;

a high resolution monochrometer element; and

a detector consisting of a plurality of detector elements,

said method comprising:

measuring the radiation intensity of the source impinging on each detector element;

introducing a sample consisting of at least one known element to be quantified and at least one unknown component into said spectrometer;

determining an uncorrected absorbance at each detector element at a plurality of times, to form an uncorrected absorbance spectrum for each time;

determining a broadband background absorbance function from each of said uncorrected absorbance spectra;

subtracting each of said broadband background absorbance functions from each of said uncorrected absorbance spectra to yield a first corrected absorbance spectrum for each of said plurality of times;

comparing each first corrected absorbance spectrum at a particular detector element corresponding to the known sample element at each particular time with each first corrected absorbance spectrum at at least one adjacent detector element at each particular time;

determining if a relationship between the first corrected absorbance measured at the particular detector element corresponding to the known sample element and the first corrected absorbance measured at said at least one adjacent detector element fluctuates by more than a predetermined amount over time indicating an interfering background absorbance;

determining a profile of said interfering background absorbance;

determining a spectral position of said interfering background absorbance by determining where said fluctuation of said relationship between said first corrected absorbance measured at the particular detector element corresponding to the known sample element and said first corrected absorbance measured at said at least one adjacent detector element is a maximum;

calculating a magnitude of the interfering absorbance from said spectral position and said profile; and

subtracting said magnitude from said first corrected absorbance.

5,910,839
WHITE LIGHT VELOCITY INTERFEROMETER

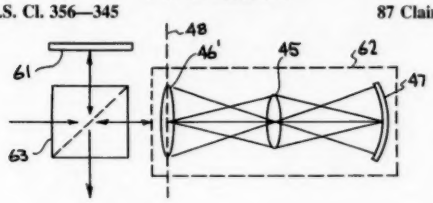
David J. Erskine, Oakland, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of application No. 08/597,082, Feb. 5, 1996, Pat. No. 5,642,194. This application Mar. 14, 1997, Appl. No. 818,020.

This patent is subject to a terminal disclaimer

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **87 Claims**



1. A method of imprinting at least one coherent echo on a beam, comprising:

directing a beam onto a mirror;

creating an apparent mirror by imaging said mirror, wherein the imaged surface of said mirror defines the location of said apparent mirror, wherein the imaged center of curvature of said mirror defines the center of curvature of said apparent mirror;

providing a second mirror having about the same curvature as said apparent mirror; and

superimposing the location of said second mirror with the location of said apparent mirror.

5,910,840
APPARATUS AND METHOD FOR INTERFEROMETRIC MEASUREMENTS

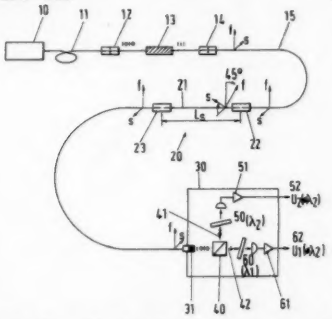
Norbert Fürstenau, Braunschweig, Germany, assignor to Deutsche Forschungsanstalt fur Luft-und Raumfahrt e.V., Germany

Filed Jul. 14, 1997, Appl. No. 892,055

Claims priority, application Germany, Jul. 12, 1996, 196 28 200

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—351 **14 Claims**



1. A device for making interferometric measurements, having a single high power, low coherence, wide bandwidth light source, and an interferometer or polarimetric sensor supplied with light from said light source, a beam divider, said beam divider dividing the light delivered by said interferometer or polarimetric sensor into two or more beam paths, a filter having a different central wavelength in each respective beam path, a measuring device in each respective beam path for quantitatively measuring received light and producing data therefrom, and a data-processing device, supplied with said data from the measuring device.

5,910,841
ELLIPSOMETER USING AN EXPANDED BEAM

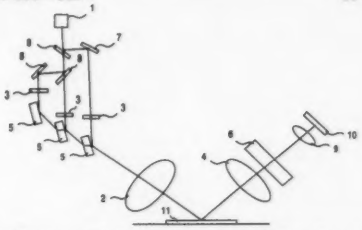
Katsuya Masao, 7190 103, 4-9-24 Nishikicho, Takikawashi, Tokyo, Japan

Filed Nov. 19, 1992, Appl. No. 978,223

Claims priority, application Japan, Nov. 19, 1991, 3-354188

Int. Cl.[6] G01J *4/04*

U.S. Cl. 356—369 **10 Claims**



1. A ellipsometer for measuring characteristics of a sample by irradiating a polarized light beam on said sample and by analyzing the reflected light beam from said sample, comprising:

a polarizer for converting a light beam from a light source into a polarized light beam;

a beam expander receiving said polarized light beam from said polarizer, for expanding said polarized light beam to form an expanded and polarized parallel light beam having a cross section with a diameter greater than the size of said polarizer, said expanded and polarized parallel light beam being reflected from said sample;

a condenser lens disposed in the expanded and reflected polarized parallel light beam for condensing said expanded and reflected polarized light beam into a condensed light beam having a cross section;

an analyzer receiving said condensed light beam from said condenser lens, for converting said condensed light beam from said condenser lens into a polarized light beam, said cross section of said condensed light beam having a diameter smaller than the size of said analyzer; and

a photo sensor for receiving said polarized light beam from said analyzer to detect an image of said sample,

wherein said light beam from said light source consists of three components having different wavelengths;

said polarizer is arranged to provide three or more different azimuthal angles of polarized light;

said polarized light beam from said analyzer is a linearly polarized light beam; and

an image forming lens is disposed between said analyzer and said photo sensor, for forming, from said linearly polarized light beam, an image on said photo sensor.

5,910,842
FOCUSED BEAM SPECTROSCOPIC ELLIPSOMETRY METHOD AND SYSTEM

Timothy R. Piwonka-Corle, Portland, Oreg.; Xing Chen, San Jose; Lloyd J. Lacomb, Jr., Santa Clara, both of Calif.; Jean-Louis Stehle, Colorbes, and Dorian Zahorski, Vannes, both of France, assignors to Kla-Tencor Corporation, San Jose, Calif.

Continuation of application No. 08/375,353, Jan. 19, 1995, Pat. No. 5,608,526. This application Nov. 27, 1996, Appl. No. 753,696.

This patent is subject to a terminal disclaimer

Int. Cl.[6] G01N *21/21*

U.S. Cl. 356—369 **18 Claims**

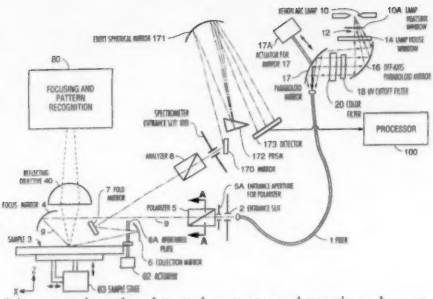
1. A method for performing spectroscopic ellipsometry measurements on a sample, including the steps of:

(a) polarizing broadband radiation to produce a sampling beam;

(b) reflectively focusing the sampling beam to a small spot on the sample;

(c) analyzing radiation of the sampling beam that has reflected from the sample, thereby producing an output beam;

(d) detecting the output beam to provide a detected output; and



(e) processing the detected output to determine changes of polarized state in amplitude and phase caused by reflection by the sample.

5,910,843

POSITIONING APPARATUS AND METHOD THEREOF, AND EXPOSURE APPARATUS

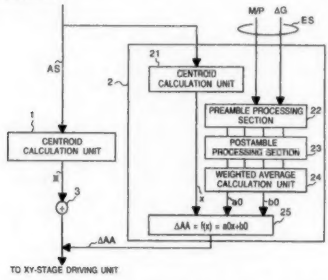
Satoru Oishi, Utsunomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1996, Appl. No. 774,881

Claims priority, application Japan, Jan. 4, 1996, 8-014776; Feb. 27, 1996, 8-065510

Int. Cl.[6] G01B *11/14*

U.S. Cl. 356—375 **15 Claims**



1. A positioning apparatus for positioning a first object having a first mark and a second object having a second mark located below the first object, by irradiating the first mark with a light beam and detecting the relative position of the first and second objects on the basis of a spot image of the light beam, formed by the light beam being transmitting through the first mark, or reflected or diffracted upon the first and second marks, said positioning apparatus comprising:

means for detecting the position of the spot image and obtaining an alignment amount on the basis of the detected position;

input means for inputting a plurality of data related to the first and second objects and the light beam;

determination means for determining to which of a plurality of groups each of the data belongs, wherein said groups are categorized by the content of the data and for determining a correction amount of the alignment amount on the basis of the group to which each of the data belongs; and

control means for controlling positioning of the first and second objects utilizing the alignment amount whose correction amount has been corrected.

5,910,844

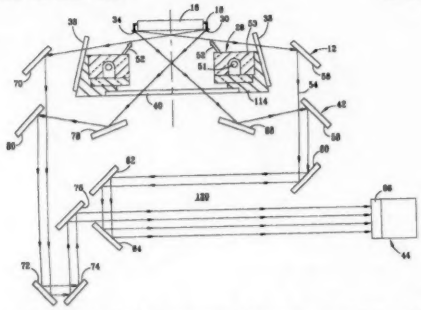
DYNAMIC THREE DIMENSIONAL VISION INSPECTION SYSTEM

Dennis D. Phillips, and Brian H. Jones, both of Richardson, Tex., assignors to Vistech Corporation, Richardson, Tex.

Filed Jul. 15, 1997, Appl. No. 892,869

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—375 **19 Claims**



1. A vision inspection system for inspecting a plurality of sides of electronic components, comprising:

an inspection window having a plurality of inspection regions which correspond to various ones of leads of the sides of the components;

an illumination source for directing light to each of said plurality of inspection regions, and illuminating portions of the component which are disposed within said plurality of inspection regions of said inspection window;

optical signals which comprise light from said illumination source which passes into the plurality of inspection regions and illuminate the edges of various ones of the leads of the components;

optical signal directing members for instantaneously directing at least two optical signals of different angular directions from one edge of each of the various ones of the leads disposed in said plurality of inspection regions to preselected points, wherein four of said optical signals are translated on a singular translated frame by said optical translating device;

an optical signal translating device for outputting electrical signals which correspond to said optical signals directed to each of said preselected points; and

an optical signal translating device output for providing said electrical signals corresponding to said optical signals to a signal processor for processing to determine the locations of the edges of the various ones of the leads of the component which are disposed in said plurality of inspection regions; and

wherein said optical signal directing members comprise reflective surfaces which are mounted for selectively adjusting in conjunction with one another such that said plurality of inspection regions are moveable into one of closer spaced positions and spaced further apart positions such that said vision inspection system accommodates inspection of various sizes of components and said optical signal translating device remains fixably attached within said vision inspection system, set at a singular adjustment for all of said positions of said plurality of inspection regions.

5,910,845

PERIPHERAL VIEWING OPTICAL SCANNER FOR THREE DIMENSIONAL SURFACE MEASUREMENT

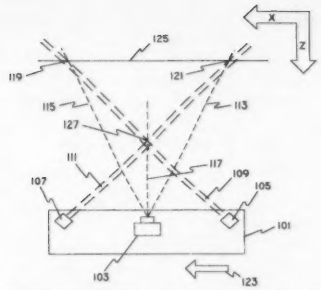
Thomas Mattingly Brown, 1430 W. 152nd Avenue, Broomfield, Colo. 80020

Filed Dec. 2, 1997, Appl. No. 982,763

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **4 Claims**

1. An optical scanner for performing non-contacting three dimensional measurement of a surface of an object, the optical scanner comprising:



a light sensor for detecting a plurality of light points reflected from the surface of the object;

a first light source for illuminating the surface of the object, wherein the light source emits a first plane of light, substantially narrower than a field of view of the light sensor, at a first acute angle to a center line of the field of view of the light sensor, and further wherein the first light source emits the first plane of light at a second acute angle to an edge of a field of view of the light sensor;

a second light source for illuminating the surface of the object, wherein the second light source emits a second plane of light, substantially the same width as the first plane of light emitted by the first light source, wherein the second light source emits the second plane of light from a position on a side of the center line of the field of view of the light sensor that is opposite the position of the first light source, and further wherein the second plane of light crosses the first plane of light at a light crossing point, and still further wherein a third acute angle, formed between the second plane of light and the center line of the field of view of the light sensor, is substantially the same as the first acute angle, and still further wherein a fourth acute angle formed between the second plane of light and a second edge of the field of view of the light sensor is substantially the same as the second acute angle;

a movable surface for mounting the light sensor and the first and second light sources, and for moving the light sensor and the first and second light sources perpendicular to the center of the field of view of the light sensor, to expose points on the surface of the object;

a fixed surface for mounting the object, wherein the object is mounted between the light crossing point and points where the first and second planes of light exit the field of view of the light sensor;

a first time measurement circuit connected to the light sensor for measuring a time between the second edge of the field of view of the light sensor and a falling edge of a last signal occurring before the center line of the field of view of the light sensor, wherein the last signal represents light reflected from the object surface and sensed by the light sensor as the movable surface is moved in front of the object;

a second time measuring circuit connected to the light sensor for measuring a time between the second edge of the field of view of the light sensor and a rising edge of a first signal occurring after the center line of the field of view of the light sensor, wherein the first signal represents light reflected from the object surface and sensed by the light sensor as the movable surface is moved in front of the object; and

a memory for storing a word containing each time measurement and a vertical location of each of the plurality of light points, wherein each word stored defines a measurement of a three dimensional point on the surface of the object.

5,910,846

METHOD AND APPARATUS FOR DETECTING THE ENDPOINT IN CHEMICAL-MECHANICAL POLISHING OF SEMICONDUCTOR WAFERS

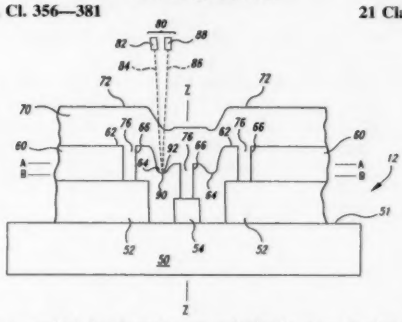
Gurtej Singh Sandhu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of application No. 08/650,087, May 16, 1996, Pat. No. 5,663,797. This application Aug. 19, 1997, Appl. No. 914,570.

This patent is subject to a terminal disclaimer

Int. Cl.[6] **G01B** *11/06*

U.S. Cl. 356—381 **21 Claims**



1. A method for detecting an endpoint in planarization of a microelectronic wafer having a lower layer of material with a first reflectivity and an upper layer with a second reflectivity positioned over the lower layer, wherein the upper layer is planarized with a process that removes material from the wafer to form a planarized surface on the substrate, the method comprising:

choosing an endpoint site on the wafer defined by a boundary between the upper and lower layers at a selected location on a topography of a circuit of the wafer;

directing a light beam against the wafer at the endpoint site, the light beam reflecting from the wafer to a light sensor;

sensing an actual intensity of the light beam reflecting from the endpoint site of the wafer; and

comparing the actual intensity of the light beam reflecting from the endpoint site with an expected intensity for a light beam reflecting from the endpoint site at a desired endpoint of the planarizing process for the wafer.

5,910,847

METHOD OF DETERMINING THE RADIATION DOSE IN A LITHOGRAPHIC APPARATUS

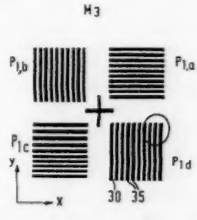
Jan E. Van der Werf; Peter Dirksen, and Manfred G. Tenner, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 18, 1997, Appl. No. 800,446

Claims priority, application European Pat. Off., Feb. 15, 1996, 96200378

Int. Cl.[6] **G01B** *11/00;* **G03F** *9/00*

U.S. Cl. 356—401 **14 Claims**



1. A method of determining the production radiation dose in an apparatus for producing a pattern on a substrate provided in a substrate table, which method comprises the following steps:

providing a substrate having a radiation-sensitive layer in the substrate table;

providing at least one substrate test mark in the radiation-sensitive layer by means of the production radiation;

detecting a substrate test mark by means of an optical alignment device for aligning a substrate alignment mark with respect to a reference alignment mark;

the substrate test mark having a periodical structure, with a period which is effectively equal to that of the reference alignment mark, and an asymmetrical division of irradiated and non-irradiated strips, the test mark detection consisting of:

first, aligning the substrate test mark relative to the reference alignment mark; and

subsequently detecting a substrate test mark asymmetry interpreted by the alignment device as a substrate testmark offset, which asymmetry is dependent on the production radiation dose, characterized in that, per period, a substrate test mark has at least two irradiated strips which are formed by means of the same number of different production radiation sub-doses.

5,910,848

FACSIMILE APPARATUS

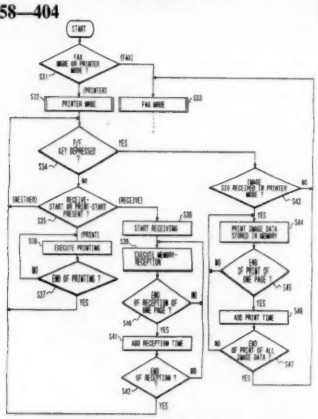
Takeshi Ono, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of application No. 08/347,234, Nov. 23, 1994, abandoned. This application Oct. 11, 1995, Appl. No. 541,177.

Claims priority, application Japan, Nov. 26, 1993, 5-320984

Int. Cl.[6] H04N *1/21*

U.S. Cl. 358—404 **11 Claims**



1. A control method for controlling a facsimile apparatus having an image memory for storing received image data, in which, in a memory reception mode, the received image data is temporarily stored in the image memory when a facsimile image signal is received, and a recorder unit prints a received image on the basis of the received image data read out from the image memory, said control method comprising the steps of:

adding reception time data to the to-be-stored received image data, the reception time data representing a reception time of when the received image data is stored in the image memory;

adding read time data to the to-be-read received image data, the read time data representing a read time of when the received image data is read out from the image memory; and

printing the received image with the reception time data and the read time data, the reception time data and the read time data being added to each page so that the reception time is distinguishable from the read time.

5,910,849

MAINTENANCE SYSTEM FOR IMAGE-FORMING APPARATUSES

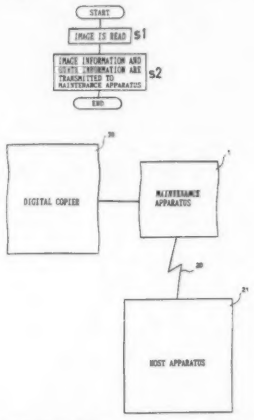
Akira Tamagaki, Soraku-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 1, 1996, Appl. No. 740,785

Claims priority, application Japan, Nov. 1, 1995, 7-284967

Int. Cl.[6] H04N *1/32;1/40;1/00*

U.S. Cl. 358—442 **19 Claims**



1. A maintenance system for an image-forming apparatus, comprising:

an image-forming apparatus including image-scanning means for reading images of documents and image-forming means for forming the images based on the image data and preset state data;

an external maintenance apparatus for adjusting the state data base on the image data and the state data read from the image-forming apparatus, determining if a predetermined period has elapsed during adjusting and setting the adjusted state data to the image-forming apparatus, the external maintenance apparatus being connected to the image-forming apparatus for supplying the state data to the image-forming apparatus;

means for supplying the image data and the state data from the image data forming apparatus to the external maintenance apparatus; and

means for adjusting the state data based on the image data and the state data when supplying the state data to the image-forming apparatus.

5,910,850

OPTIMIZATION BINARIZING CIRCUIT

Syunzi Iinuma, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 28, 1994, Appl. No. 313,771

Claims priority, application Japan, Sep. 30, 1993, 5-245460

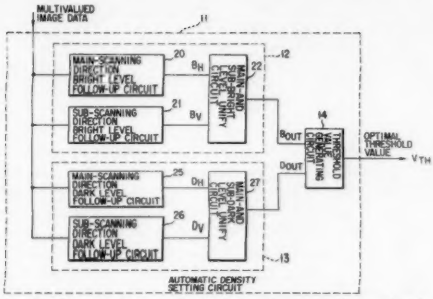
Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—461 **16 Claims**

1. A binarizing circuit comprising:

bright side follow-up means for generating bright side follow-up data by applying a first follow-up formula to inputted image data when a density of the inputted image data rises, and by applying a second follow-up formula to the inputted image data when the density falls;

dark side follow-up means for generating dark side follow-up data by applying a third follow-up formula to the inputted image data when the density rises, and by applying a fourth follow-up formula to the inputted image data when the density falls;



threshold generating means for generating an optimum threshold for the inputted image data using a predetermined algorithm based on the bright side follow-up data and the dark side follow-up data;

delaying means for delaying the inputted image data by a predetermined time, and for outputting the delayed image data; and

binarizing means for comparing the delayed image data output from the delaying means and the optimum threshold generated by the threshold generating means, and for binarizing the input image data based on the comparison.

5,910,851

MULTIPLE WAVELENGTH TRANSCEIVER

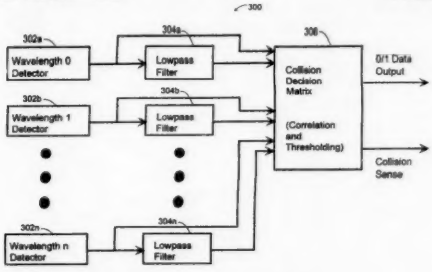
Paul A. Flaherty, Belmont, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 4, 1997, Appl. No. 794,510

This patent is subject to a terminal disclaimer

Int. Cl.[6] H04B *10/08; 10/00*

U.S. Cl. 359—110 **8 Claims**



1. Apparatus for communication comprising:

a plurality of detectors, each detector capable of detecting an electromagnetic wave of a respective different wavelength;

a transmitter, the transmitter capable of generating an electromagnetic wave of one of the respective different wavelengths; and

a collision detector coupled to the plurality of detectors and the transmitter, the collision detector determining when the energy level of one of the plurality of detectors exceeds a threshold value while the transmitter transmits the electromagnetic wave.

5,910,852

MODULATED AND DEPOLARIZED OPTICAL SIGNAL TRANSMISSION SYSTEM

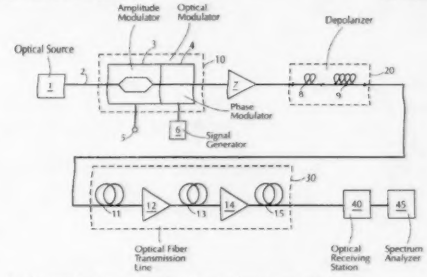
Flavio Fontana, Cormano; Federico Franzoso, Loreo; Giuseppe Ravasio, Capriate, and Claudio Zammarchi, Milan, all of Italy, assignors to Pirelli Cavi S.p.A., Italy

Filed Dec. 3, 1996, Appl. No. 759,792

Claims priority, application Italy, Dec. 21, 1995, MI95A2722

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—156 **11 Claims**



1. An optical communication system comprising:

an optical source adapted to emit an optical radiation;

an optical modulator receiving said optical radiation and a transmission signal having frequencies included within a signal band and adapted to emit a modulated optical signal having a predetermined optical bandwidth;

an optical transmission line comprising an optical fibre portion;

an optical receiver adapted to receive said optical signal in the presence of a predetermined signal-to-noise ratio (SNR) in said signal band, measured in a 5 MHz band;

a depolarizer optically connected between said optical modulator and said optical transmission line and comprising two polarization-maintaining optical fibre portions having predetermined lengths and birefringence and optically connected with each other so that the respective polarization axes form an angle of 45°, wherein said optical bandwidth and said lengths and birefringence of said polarization-maintaining optical fibres are operatively selected in such a manner that said SNR at the receiver in said signal band does not differ more than 0.5 dB from the SNR at the receiver in said signal band measured in a 5 MHz band after substituting said optical fibre portion of said transmission line with a passive attenuator of same attenuation.

5,910,853

ROTARY POLYGON MIRROR OPTICAL SCANNING DEVICE

Ishizuka Yutaka, Nagano, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan

Filed Dec. 24, 1997, Appl. No. 998,270

Claims priority, application Japan, Dec. 27, 1996, 8-349913

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—200 **6 Claims**

1. A rotary polygon mirror optical scanning device comprising:

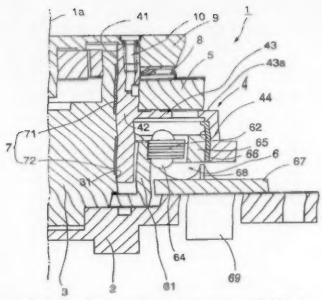
a fixed shaft;

a rotor having a shaft hole, to which said fixed shaft is inserted, and rotatably supported against an outer circular portion of said fixed shaft;

a hydrodynamic bearing mechanism for supporting said rotor, said hydrodynamic bearing mechanism having first and second hydrodynamic pressure generating grooves which are, axially away from one another, formed on at least one of an outer surface of said fixed shaft and an inner surface of said shaft hole of said rotor;

a rotary polygon mirror being mounted on said rotor;

a motor portion being arranged for rotating said rotor;



said fixed shaft having a diameter being one-third or more of a diameter of a polygonal inscribed circle of said rotary polygon mirror; and

an area for cutting said first hydrodynamic pressure generating groove being arranged at an axially identical position with said rotary polygon mirror.

5,910,854

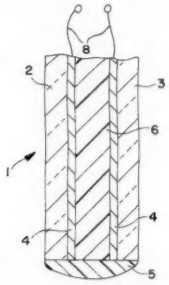
ELECTROCHROMIC POLYMERIC SOLID FILMS, MANUFACTURING ELECTROCHROMIC DEVICES USING SUCH SOLID FILMS, AND PROCESSES FOR MAKING SUCH SOLID FILMS AND DEVICES

Desaraju V. Varaprasad; Mingtang Zhao, both of Holland; Craig Allen Dornan, Grand Haven, all of Mich.; Anoop Agrawal; Pierre-Marc Allemand, both of Tucson, Ariz., and Niall R. Lynam, Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation-in-part of application No. 08/406,663, Mar. 20, 1995, abandoned, which is a continuation of application No. 08/193,557, Feb. 8, 1994, abandoned, which is a continuation-in-part of application No. 08/023,675, Feb. 26, 1993, abandoned. This application Mar. 26, 1997, Appl. No. 824,501.

Int. Cl.[6] **G02F** *1/153*

U.S. Cl. 359—273 **27 Claims**



1. A variable transmission window assembly suitable for use as an architectural or vehicular glazing, said window assembly comprising:

a first glass substrate having a first transparent conductor coated surface;

a second glass substrate having a second transparent conductor coated surface, said second substrate positioned in substantially parallel spaced-apart relationship with said first substrate and with said first and second conductor coated surfaces facing each other; and

an electrochromic medium disposed between said first and second substrates whereby the transmission of light through said electrochromic medium is changed when an electrical potential is applied thereto and wherein said electrochromic medium comprises a plasticized, cross-linked polymeric solid film formed by curing an electrochromic monomer composition that includes at least one polyfunctional component capable of cross-linking, at least one anodic electrochromic compound, at least one cathodic electrochromic compound and a plasticizer.

5,910,855

PASSIVE ACOUSTO-OPTIC MODULATOR

Andrew James Thomas, Gosport, United Kingdom, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, United Kingdom

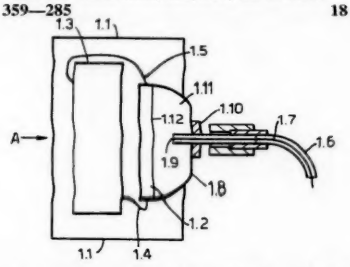
PCT No. PCT/GB96/00450, § 371 Date Sep. 3, 1997, § 102(e) Date Sep. 3, 1997, PCT Pub. No. WO96/28001, PCT Pub. Date Sep. 12, 1996

PCT Filed Feb. 29, 1996, Appl. No. 894,958

Claims priority, application United Kingdom, Mar. 3, 1995, 9504298

Int. Cl.[6] **G02F** *1/11;1/03;1/01;* **H04B** *10/12*

U.S. Cl. 359—285 **18 Claims**



1. A passive acousto-optic modulator for the modulation of a light beam as a function of a variation in air pressure comprising a beam splitter arranged relative to the beam so as to produce a signal beam and reference beam;

a light modulator which modulates the signal beam, the light modulator comprising an approximately flat optically reflective surface capable of movement, the reflective surface being located in a position which, at rest, is a predetermined distance from the beam splitter and is approximately parallel to and facing the beam splitter and a piezo electric element, the piezo electric element being connected to the reflective surface in such a way that when an electric potential is applied across the piezo electric element, it causes the reflective surface to move; and

conversion means to convert variations in air pressure into corresponding variations in a signal for driving the light modulator;

the arrangement being such that the modulated signal beam is combined with the reference beam to produce constructive or destructive interference.

5,910,856

INTEGRATED HYBRID SILICON-BASED MICRO-REFLECTOR

Syamal K. Ghosh, Rochester; Edward P. Furlani, Lancaster, and Dilip K. Chatterjee, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1998, Appl. No. 61,619

Int. Cl.[6] **G02B** *26/00*

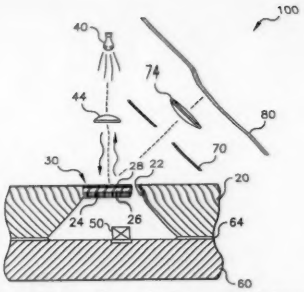
U.S. Cl. 359—291 **3 Claims**

1. A light reflective device comprising:

(a) an insulative substrate **60**;

(b) a silicon wafer **20** positioned over the insulative substrate **60** and defining an opening **22** and having a flexible beam **30** portion having top and bottom surfaces which extend into the opening;

(c) a layer of ferromagnetic material formed over the top surface of the flexible beam portion;



(d) a reflector **28** formed over the ferromagnetic layer on the top surface of the flexible beam portion; and

(e) a micro-electromagnet **50** mounted on the insulative substrate relative to the opening of the silicon wafer and adapted to produce a magnetic field in response to an applied current which acts on the ferromagnetic layer to cause the bending of the flexible beam portion, ferromagnetic layer and reflector.

5,910,857

LASER AMPLIFIER

Andrew Maxwell Scott, and Kevin Dennis Ridley, both of Malvern, United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, United Kingdom

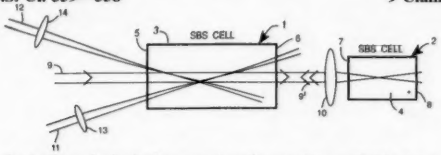
PCT No. PCT/GB96/00133, § 371 Date Aug. 14, 1997, § 102(e) Date Aug. 14, 1997, PCT Pub. No. WO96/26561, PCT Pub. Date Aug. 29, 1996

PCT Filed Jan. 23, 1996, Appl. No. 894,194

Claims priority, application United Kingdom, Feb. 20, 1995, 9503301

Int. Cl.[6] **H01S** *3/00*

U.S. Cl. 359—338 **9 Claims**



1. A phase locked phase conjugation system, suitable for use with laser amplifiers, comprising:

means for providing a beam of laser light (**50**, **70**);

means (**53**, **71**, **72**, **76**, **81**, **87**)for splitting the beam into sub-beams (**9**, **11**, **12**, **54**, **55**, **73**, **75**, **82**, **83**);

a first (**1**) and a second (**2**, **20**) Brillouin (SBS) cell capable of providing phase conjugation;

means for collimating one of the sub-beams (**9**, **55**, **73**) and directing (**53**, **60**, **61**, **71**, **72**) the collimated sub-beam (**55**, **73**) through the first SBS cell (**1**);

means (**10**, **20**, **62**, **63**, **64**, **65**) for directing and focusing the collimated sub-beam (**9**, **55**, **73**) from the first SBS cell (**1**) into the second cell (**20**) so that a phase conjugated sub-beam is reflected and returned (**9'**) from the second SBS cell (**2**, **20**) back into the first SBS cell (**1**) for mixing with the original collimated sub-beam;

means (**13**, **14**, **78**, **79**, **85**, **86**, **89**, **90**, **80**) for directing and focusing at least two or more sub-beams (**11**, **12**, **75**, **82**, **83**) into the first SBS cell (**1**) to overlap with the collimated sub-beam (**9**, **73**) at different regions of the volume traversed by the collimated sub-beam (**9**, **73**); and

means (**51**, **53**, **71**) for recombining at least some of the sub-beams into a single coherent light beam (**66**, **91**);

the arrangement being such that phase locked phase conjugation of the sub-beams occur within the volume within the first SBS cell, (**1**) and the recombined light beam (**66**, **91**) has a spatial phase substantially the same as the original beam (**50**, **70**).

5,910,858

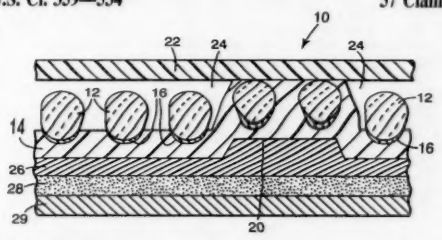
RETROREFLECTIVE SHEETING WITH COATED BACK SURFACE

Cheryl M. Frey, White Bear Lake, and Bruce B. Wilson, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 1, 1996, Appl. No. 625,860

Int. Cl.[6] **G02B** *5/128;5/126*

U.S. Cl. 359—534 **57 Claims**



1. A retroreflective article comprising:

a) encapsulated-lens retroreflective sheeting having a front surface and a back surface, the retroreflective sheeting retroreflecting light entering through the front surface;

b) a plurality of indentations in the back surface of the retroreflective sheeting; and

c) seal coat located on the back surface of the retroreflective sheeting, wherein the seal material interacts with the back surface and at least partially fills the indentations in the back surface to form a uniform back surface of the retroreflective sheeting: wherein the seal coat is prepared from a seal coat precursor comprising a radiation curable component; wherein the radiation curable component comprises a cationic curable resin, a free radical curable resin, or mixtures thereof.

5,910,859

IMAGE STABILIZING APPARATUS

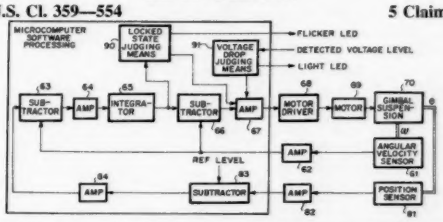
Kenichi Takahashi, and Kouichi Nagata, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Sep. 24, 1997, Appl. No. 936,533

Claims priority, application Japan, Oct. 1, 1996, 8-280264

Int. Cl.[6] **G02B** *27/64*

U.S. Cl. 359—554 **5 Claims**



1. An image stabilizing apparatus attached to an optical apparatus, said optical apparatus comprising a monocular or binocular optical system including an erecting prism disposed between objective and ocular lenses which are firmly disposed within a case;

said image stabilizing apparatus comprising:

gimbal suspension means having first and second rotational axes respectively extending in transverse and vertical directions of said optical apparatus so as to pivotally attach said erecting prism to said case;

an actuator for pivotally moving said gimbal suspension means about said first and second rotational axes;

first and second angular position data detecting means for respectively detecting angular position data of said gimbal suspension means about said first and second rotational axes;

first and second angular velocity data detecting means, firmly attached to said gimbal suspension means, for respectively detecting angular velocity data of said gimbal suspension means upon a change in posture of said optical apparatus;

feedback control means for controlling pivotal movement of said gimbal suspension means about said first and second rotational axes by driving said actuator, based on the data detected by said angular position data detecting means and angular velocity data detecting means, so as to secure said erecting prism with respect to an inertial system;

locked state judging means for judging whether or not the pivotal movement of said gimbal suspension means is in a locked state by detecting a state of a signal for driving said actuator;

driving signal input stopping means for substantially stopping said driving signal from being inputted to said actuator when it is judged by said locked state judging means that the pivotal movement of said gimbal suspension means is in said locked state; and

locked state alarm means for indicating said locked state when it is judged by said locked state judging means that the pivotal movement of said gimbal suspension means is in said locked state.

5,910,860

ZOOM LENS

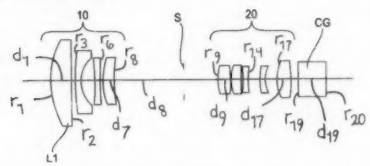
Hiroyasu Ozaki, Tokyo, and Takayuki Ito, Saitama-ken, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1998, Appl. No. 6,896

Claims priority, application Japan, Jan. 17, 1997, 9-006587

Int. Cl.[6] G02B *13/18*

U.S. Cl. 359—691 **5 Claims**



1. A zoom lens comprising a first movable lens group having negative refracting power and a second movable lens group having positive refracting power, in this order from the object side, and an immovable diaphragm provided between said first and second lens groups so as not to move during the zooming operation, wherein said zoom lens satisfies the following conditions:

(1) $0.45<f_w/f_2<0.7$,

(2) $0.5<f_2/|f_1|<1.0$,

(3) $0.8<D_w/f_2<1.3$,

wherein

fw represents the focal length of the entire optical system at the wide-angle extremity,

f_1 is the focal length of the first lens group ($f_1<0$),

f_2 represents the focal length of the second lens group ($f_2>0$),

D_w represents the distance between the diaphragm and the first principal point of the second lens group at the wide-angle extremity.

5,910,861

TECHNIQUE FOR CONTROLLING THE WRITE CURRENTS OF A MAGNETIC DISK RECORDING APPARATUS

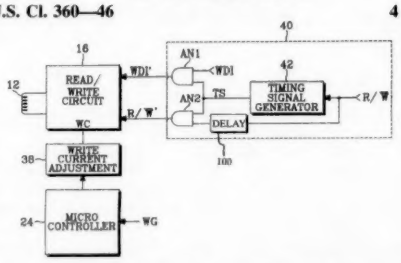
Young-Sub Ahn, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 27, 1996, Appl. No. 781,982

Claims priority, application Rep. of Korea, Dec. 27, 1995, 95-59431

Int. Cl.[6] G11B *5/09;5/02*

U.S. Cl. 360—46 **4 Claims**



1. A circuit for controlling the write currents of a magnetic disk recording apparatus comprising:

a read/write circuit for performing a write or read operation according to a read/write mode signal and for applying a constant write current to a magnetic head in response to a write data in the write mode;

a write current adjustment circuit connected to said read/write circuit for adjusting step by step the amount of the write current applied to the head under a given control, the write current adjustment circuit comprising a pulse width modulation (PWM) signal generator having an input and an output, and further comprising first and second field effect transistors (FETs) and first and second and third resistors and a capacitor; the output of the PWM signal generator being connected to a gate of the first FET and a source of the first FET being grounded and a drain of said first FET being connected to one end of the first resistor, the other end of the first resistor being connected to a junction point of one end of the capacitor and one end of the second resistor, the other end of the second resistor being connected to the read/write circuit, the other end of the capacitor being grounded, a drain of the second FET being grounded and a source of the second FET being connected to one end of the third resistor, the other end of the third resistor being connected to the read/write circuit;

a timing control circuit for prolonging the read mode of said read/write circuit for a predetermined time on a transit of the mode signal state from the write to the read mode, the timing control circuit having one output being connected to a gate of the second FET via an inverter; and

a micro controller for controlling said write current adjustment circuit to gradually reduce the amount of the write current for a given time in response to the end of a write gate signal defining write intervals in the write mode, the micro controller being connected to the input of the PWM signal generator of the write current adjustment circuit.

5,910,862
MAGNETIC DISK APPARATUS

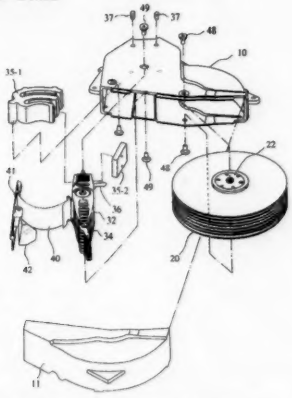
Yoshinori Ogawa; Yuji Sasaki; Mitsuaki Yoshida, all of Kawasaki; Kazunori Shikano, and Masato Ishikawa, both of Higashine, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of application No. 08/451,863, May 26, 1995, abandoned, which is a division of application No. 08/306,014, Sep. 14, 1994, abandoned. This application Mar. 31, 1997, Appl. No. 829,783.

Claims priority, application Japan, Dec. 7, 1993, 5-340667; Feb. 18, 1994, 6-021218

Int. Cl.[6] G11B *33/02;5/012*

U.S. Cl. 360—97.01 **10 Claims**



1. A magnetic disk apparatus comprising:

at least one magnetic disk;

rotating means for rotating said magnetic disk;

a magnetic head for writing and reading information to and from said magnetic disk;

a rotary type actuator having said magnetic head at a front end thereof, for moving said magnetic head to traverse tracks of said magnetic disk; and

an enclosure including:

a one-piece unitary base to which both ends of fixing shafts of both said rotating means and said rotary type actuator are fixed, said base having an open side; and

a cover fitted in to said base at said open side;

said open side defining a separating plane between said base and said cover, said separating plane being formed obliquely to a long side of said magnetic disk apparatus,

said separating plane being shorter in length than said long side of said magnetic disk apparatus, and said fixing shaft of said actuator being further from said separating plane than said fixing shaft of said rotating means; and

said fixing shaft of said actuator being arranged to a position so that a rotational moment of the rotary actuator is generally parallel to said separating plane.

5,910,863
MAGNETIC HEAD SLIDER AND MAGNETIC DISK DEVICE USING THE SAME

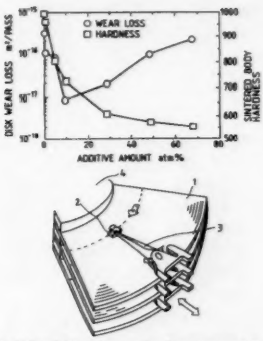
Takeshi Miyazaki, Hitachi; Yasutaka Suzuki, Jyuou-machi, and Hiroshi Tomishima, Kawamoto-machi, all of Japan, assignors to Hitachi, Ltd., and Hitachi Metals, Ltd., both of Tokyo, Japan

Continuation of application No. 08/309,354, Sep. 20, 1994, abandoned. This application Oct. 30, 1996, Appl. No. 739,927.

Claims priority, application Japan, Sep. 20, 1993, 5-255228

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 **8 Claims**



1. A magnetic head slider, which is combined with a continuous medium type magnetic disk having a carbon protective layer, said magnetic head slider being formed of a sintered body essentially consisting of titanium oxide as the major component thereof and at least one material selected from the group consisting of Y, Yb, Nb, Mg, Er, Fe, Cr, Zr and Al in an amount of from 2 atm % to 50 atm % with respect to the titanium oxide, wherein the at least one material forms a composite oxide with the titanium oxide which suppress chemical reaction of the titanium oxide with the carbon during sliding contact of the magnetic head slider with the continuous medium type magnetic disk, thereby reducing wear between surfaces of the magnetic head slider and magnetic disk, and wherein said sintered body further contains a carbide, said carbide being contained in an amount up to 30 volume %, selected from the group consisting of SiC, TiC, ZrC, NbC, VC, BC, HfC, TaC and WC.

5,910,864
THIN FILM MAGNETIC HEAD HAVING NON-LINEAR RAILS

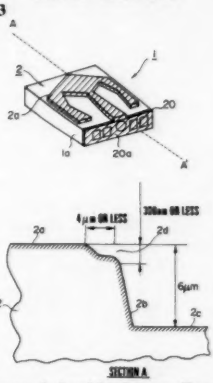
Yasuo Hira; Tamaki Toba, both of Yokohama; Hirotaka Imayama, Kawasaki; Atsuko Ohkawa, Yokohama; Masayasu Fujisawa, Kanagawa-ken; Kazuo Nate, Machida; Hideki Sonobe, Odawara; Saburo Suzuki, Minamiashigara; Eisei Togawa; Hiroshi Ishizaki, both of Odawara, and Yoshiki Hagiwara, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of application No. 08/263,915, Jun. 22, 1994, Pat. No. 5,567,333. This application Oct. 22, 1996, Appl. No. 773,783.

Claims priority, application Japan, Jun. 25, 1993, 5-154907; Dec. 10, 1993, 5-310110; Apr. 15, 1994, 6-077362

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 **5 Claims**



1. A thin film magnetic head having non-linear rail(s), which is characterized in that each rail is formed so as to have a tapered angle of 55–90°, wherein each rail is chamfered, by the ion milling employed in the formation of said rail, by 3–40 μm in length and 1–50 μm in depth at the rail top surface at the end of the element

portion of the magnetic head which becomes an air outlet when the magnetic head is in operation.

5,910,865

SLIDER HAVING TERMINATED SIDE RAILS WITH TRAILING EDGE CUTS

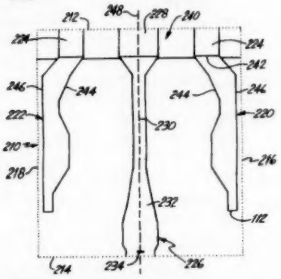
Ling Wang, Minneapolis; Peter Crane, Richfield, and Lei Zhang, Edina, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

PCT No. PCT/US97/02205, § 371 Date Oct. 29, 1997, § 102(e) Date Oct. 29, 1997, PCT Pub. No. WO98/32129, PCT Pub. Date Jul. 23, 1998

Provisional application No. 60/035,011, Jan. 15, 1997. This PCT application Feb. 12, 1997, Appl. No. 952,561.

Int. Cl.[6] G11B *21/21*

U.S. Cl. 360—103 **8 Claims**



1. A disc head slider comprising:

leading, trailing, inside and outside slider edges;

a slider center line extending from the leading slider edge to the trailing slider edge;

first and second raised rails, each rail comprising an inside rail edge, an outside rail edge, a leading rail edge and a trailing rail edge, and forming first and second bearing surfaces, respectively, which terminate prior to the trailing slider edge;

a raised center rail extending along the slider center line and between the first and second raised rails and comprising a leading section, a waist section and a trailing section, wherein the leading and trailing sections of the raised center rail are each wider than the waist section of the raised center rail;

a tapered surface formed within the first and second raised rails and extending from the leading slider edge to an intersection with the first and second bearing surfaces;

first and second cavities positioned between the raised center rail and the first and second raised rails, respectively, and extending from the leading slider edge to the trailing slider edge;

wherein the first and second raised rails each further comprises a leading section, a waist section, a leg section which extends from the waist section of the respective first and second raised rails to the leading section of the respective first and second raised rails and a trailing section which extends from the waist section of the respective first and second raised rails to the respective trailing rail edge of the first and second raised rails and wherein the trailing sections of the first and second raised rails widen from the waist sections of the first and second raised rails toward the trailing rail edges of the first and second raised rails and each trailing section of the first and second raised rails comprises a notch along at least one of the inside and outside rail edges which narrows the respective trailing section of the first and second raised rails at the notch; and

wherein the inside and outside rail edges converge toward the slider center line for a distance along the leg sections, between the waist sections of the first and second raised rails and the leading sections of the first and second raised rails.

5,910,866

DEVICE FOR CONNECTING SIGNALS TO A TAPE REPRODUCING APPARATUS IN WHICH A SIGNAL TRANSMITTING HEAD IS BIASED TO ABUT A MAGNETIC HEAD OF A TAPE REPRODUCING APPARATUS

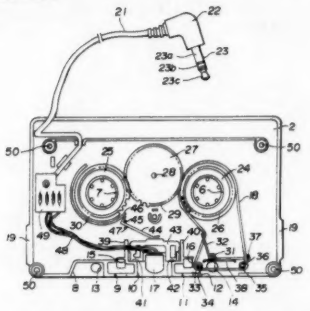
Shinji Shiomoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 1, 1997, Appl. No. 904,959

Claims priority, application Japan, Aug. 16, 1996, 8-216451

Int. Cl.[6] G11B *31/00;5/48*

U.S. Cl. 360—104 **21 Claims**



1. A connection apparatus for use with a tape reproducing apparatus adapted to reproduce a magnetic tape for transmitting an output signal from a sound source to a tape reproducing apparatus, comprising:

a housing shaped for enabling loading on a tape reproducing apparatus;

a signal transmitting head arranged in an opening in said housing so as to be abutted against a magnetic head of a tape reproducing apparatus when said housing is loaded on a tape reproducing apparatus;

signal transmission means for transmitting an output signal from a sound source to said signal transmitting head; and

a supporting mechanism for supporting said signal transmitting head and biasing said signal transmitting head in a direction of abutment against a magnetic head of a tape reproducing apparatus and for rotatably supporting the signal transmitting head so as to meet any movement of a magnetic head of a tape reproducing apparatus.

5,910,867

MAGNETIC HEAD DEVICE WITH INTEGRALLY MOLDED CONDUCTIVE ELASTIC BODY AND RESIN BODY

Tomoyuki Takahashi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of application No. 08/518,394, Aug. 23, 1995, abandoned, which is a division of application No. 08/448,528, Jun. 14, 1995, abandoned. This application Mar. 10, 1997, Appl. No. 814,120.

Claims priority, application Japan, Oct. 25, 1993, 5-288681; Oct. 2, 1994, 6-016844

Int. Cl.[6] G11B *5/55;21/12*

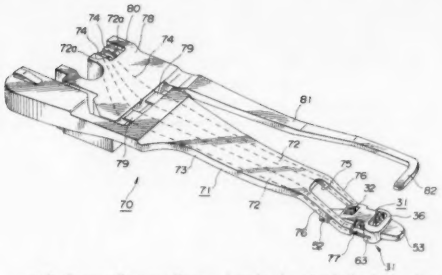
U.S. Cl. 360—106 **12 Claims**

1. A magnetic head device used for recording of a magneto-optical recording medium and adapted to be, on the magneto-optical recording medium, slidably in contact therewith, the magnetic head device comprising:

a magnetic head element comprising a core and a bobbin on which a coil is attached;

a slidable contact body to which the core and the bobbin of the magnetic head element are attached;

an electrically conductive elastic body for elastically supporting the slidable contact body so that the slidable contact body can be in a sliding position in sliding contact with the magneto-



optical recording medium, wherein the elastic body is electrically connected to the coil;

a supporting body made of resin in which the electrically conductive elastic body is integrally molded, wherein the supporting body supports said electrically conductive elastic body so that the slidable contact body has freedom to move between the sliding position and a position spaced away from the magneto-optical recording medium;

a regulating section extending from the supporting body in a position for stopping the slidable contact body when said slidable contact body moves away from the sliding position into engagement with the regulating section, thus regulating movement of the slidable contact body in a direction toward the position spaced away from the magneto-optical recording medium from the sliding position without regulating movement of the slidable contact body away from said position spaced away from the magneto-optical recording medium toward said sliding position; and

a fixed portion, wherein the elastic body includes a first elastic displacement portion formed between the supporting body and the slidable contact body and a second elastic displacement portion formed between the fixed portion and the supporting body, the elastic body is formed by electrically conductive plate-shaped material, the elastic body has a first end and a second end, the elastic body has a first terminal portion formed at the first end, and the first terminal portion is integrally attached to the slidable contact body and is electrically connected to the coil.

5,910,868

MAGNETORESISTIVE SENSOR

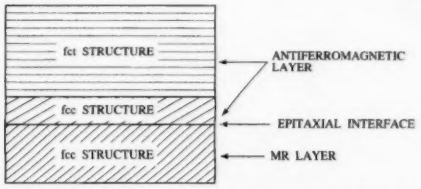
Hisao Kurosawa, Fukaya; Chiharu Mitsumata, Gunma-ken; Toshio Kobayashi, Fujioka, and Shin Noguchi, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Nov. 6, 1996, Appl. No. 744,661

Claims priority, application Japan, Jun. 11, 1995, 7-311604

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **5 Claims**



1. A magnetoresistive sensor for use in a magnetoresistive head, comprising a magnetoresistive ferromagnetic layer formed of a NiFe-based alloy and an antiferromagnetic layer formed of a NiMn-based alloy in direct contact with said magnetoresistive ferromagnetic layer at an interface, wherein said magnetoresistive ferromagnetic layer has a face-centered-cubic structure and said antiferromagnetic layer has a binary crystalline structure continuously changing from a face-centered-cubic structure to a face-centered-tetragonal structure with the face-centered-cubic structure being in the vicinity of the interface of said magnetoresistive ferromagnetic layer and said antiferromagnetic layer, the interface of said magnetoresistive ferromagnetic layer and said antiferromagnetic layer being continuous with respect to crystalline structure due to epitaxial growth of said antiferromagnetic layer on said magnetoresistive ferromagnetic layer.

5,910,869

PLANAR MAGNETIC HEAD WITH LONGITUDINAL MULTILAYER MAGNETORESISTANCE

Jean-Marc Fedeli, St. Martin D'Meres, France, assignor to Commissariat a l'Energie Atomique, Paris, France, and Silmag, Grenoble, France

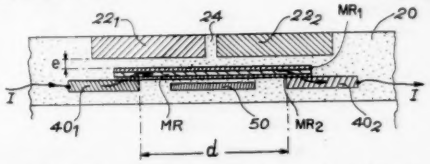
PCT No. PCT/FR95/01168, § 371 Date Mar. 12, 1997, § 102(e) Date Mar. 12, 1997, PCT Pub. No. WO96/08814, PCT Pub. Date Mar. 21, 1996

PCT Filed Sep. 12, 1995, Appl. No. 793,894

Claims priority, application France, Sep. 13, 1994, 94 10895

Int. Cl.[6] G11B *5/127*

U.S. Cl. 360—113 **5 Claims**



1. A planar magnetic head comprising a substantially planar magnetic layer formed of two pole pieces arranged in tandem along a longitudinal direction separated by a head gap, a substantially planar multilayer magnetoresistance component consisting of a stack of magnetic layers separated by non-magnetic metal layers, said magnetoresistance component extending in said longitudinal direction between said pole pieces transverse to said head gap and being disposed beneath said pole pieces and said head gap separated by an insulating layer, said magnetoresistance component receiving a magnetic field from said two pole pieces in said longitudinal direction, a pair of electrical conductors spaced apart from one another with each conductor connected to said magnetoresistance component to form an electrical circuit when connected to a source of electrical power such that current is caused to flow through said magnetoresistance component in said longitudinal direction.

5,910,870

MAGNETORESISTIVE EFFECT COMPOSITE HEAD WITH LAMINATED MAGNETIC LAYER ISOLATED FROM MAGNETIC POLE LAYER

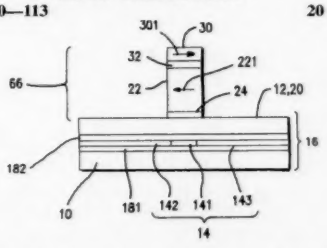
Nobuyuki Ishiwata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 17, 1997, Appl. No. 958,712

Claims priority, application Japan, Nov. 15, 1996, 8-304435

Int. Cl.[6] G11B *5/147;5/39*

U.S. Cl. 360—113 **20 Claims**



1. A multi-layer structure for performing recording operations comprising:

a magnetic pole layer;

a magnetic isolation layer extending over said magnetic pole layer; and

a magnetic layer extending over said magnetic isolation layer so that said magnetic layer is isolated by said magnetic isolation layer from said magnetic pole layer,

wherein said magnetic layer has a unidirectional magnetization in parallel to an interface between said magnetic isolation layer and said magnetic layer, whilst said magnetic isolation layer is capable of suppressing a generation of exchange coupling between said magnetic layer and said magnetic pole layer, whereby a magnetization of said magnetic pole layer is biased and stabilized in a direction antiparallel to a direction of said magnetization of said magnetic layer by static magnetic coupling of said magnetization of said magnetic layer and said magnetic layer comprises laminations of a soft magnetic layer extending over said magnetic isolation layer and an anti-ferromagnetic layer extending over said soft magnetic layer.

5,910,871

MAGNETIC HEAD HAVING TRACK WIDTH SPECIFIED BY GROOVES FORMED WITH PROJECTION ION BEAM

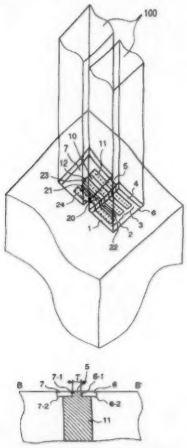
Yoshimi Kawanami, Kokubunji; Hisashi Takano, Kodaira; Kaoru Umemura, Musashino; Yuichi Madokoro, and Satoshi Tomimatsu, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1997, Appl. No. 837,218

Claims priority, application Japan, Apr. 25, 1996, 8-104908

Int. Cl.[6] G11B *5/31;5/127*

U.S. Cl. 360—122 **6 Claims**



1. A magnetic head for performing writing and reading operations of magnetically recorded information to a magnetic recording medium, wherein at least one groove for specifying the track width of a magnetic pole of said head is provided in a part of a sliding surface of said magnetic head, and wherein said at least one groove has a substantially uniform depth and a depth of said at least one groove at the edge opposite to the pole is deeper than said substantially uniform depth, and said at least one groove is processed by irradiating with an ion beam which projects a mask with reduction.

5,910,872

METHOD OF DISCRIMINATING BETWEEN AN INTERNAL ARC AND AN INTERRUPTION ARC DETECTED INSIDE A METAL-CLAD ELECTRICAL INSTALLATION

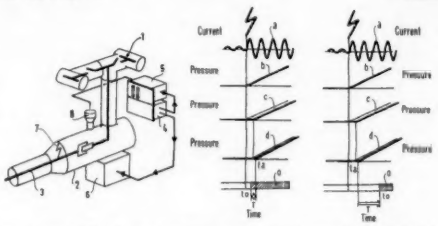
Jean Marmonier, and Jean-François Penning, both of Aix Les Bains, France, assignors to Gec Alsthom T & D SA, Paris, France

Filed Dec. 15, 1997, Appl. No. 990,435

Claims priority, application France, Dec. 16, 1996, 96 15427

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—2 **6 Claims**



1. A method of discriminating an arc detected in metal-clad equipment including a circuit breaker, and fitted with (1) a computer, and (2) a protective system for transmitting a trigger order to said circuit breaker and said computer, the method comprising the steps of:

detecting an arc;

generating an arc-appearance signal in response to said arc detection;

transmitting said arc-appearance signal to said computer;

determining a time lapse T according to the formula: $t_o - t_a$ wherein

i. t_o is an instant at which said computer receives said circuit breaker trigger order, and

ii. t_a is an instant at which said arc-appearance signal is first acquired by said computer; and

discriminating said arc based on said time lapse T.

5,910,873

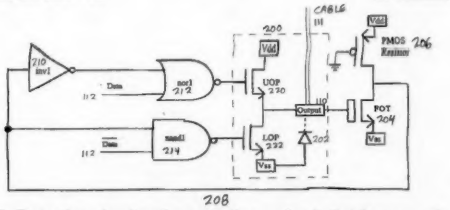
FIELD OXIDE TRANSISTOR BASED FEEDBACK CIRCUIT FOR ELECTRICAL OVERSTRESS PROTECTION

Luis Sergio V. Bolua, Sunnyvale; Tuong Hai Hoang; Tony S. Lo, both of San Jose, and Larry W. DeClue, Saratoga, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 19, 1997, Appl. No. 802,366

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **15 Claims**



1. Protection circuitry for protecting a circuit that has a maximum high operating voltage from damage due to electrical overstress resulting from a transient voltage applied to a node of the circuit to be protected, wherein the transient voltage is equal to or greater than a selected peak voltage, the peak voltage being greater than the maximum high operating voltage of the circuit to be protected, the protection circuitry comprising:

a sensor that includes a field oxide transistor having a threshold voltage equal to the selected peak voltage, the gate of the field oxide transistor being connected to said node of the circuit to

be protected such that the field oxide transistor turns on when the transient voltage is applied to said node, whereby the sensor provides an active sensor output signal;

a logic circuit connected to receive the active sensor output signal as an input and that responds to the active sensor output signal by generating an active logic circuit output signal; and

a transient signal shunting element connected to said node and that responds to the active logic circuit output signal by providing a conductive path to shunt the transient voltage to a negative supply.

5,910,874

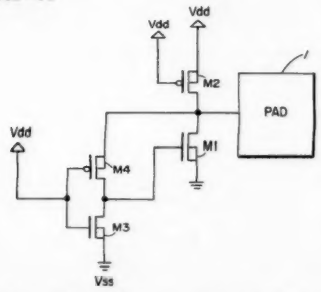
GATE-COUPLED STRUCTURE FOR ENHANCED ESD INPUT/OUTPUT PAD PROTECTION IN CMOS ICS

Kris Iniewski, and Marek Syrzycki, both of Coquitlam, Canada, assignors to PMC-Sierra Ltd., Burnaby, Canada

Filed May 30, 1997, Appl. No. 866,120

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **7 Claims**



1. An electrostatic discharge protection circuit comprising a static discharge input node, a first NMOS FET having its drain connected to said input node and its source and substrate connected to Vss, a first CMOS inverter comprised of a first PMOS FET and a second NMOS FET having the source and substrate of the first PMOS FET connected to said input node, the drain of the first PMOS FET connected at a junction to the drain of the second NMOS FET, and the source of the second NMOS FET connected to Vss, and the gates of the first PMOS FET and of the second NMOS FET connected to Vdd and said junction connected to the gate of the first NMOS FET, a second PMOS FET having its drain connected to said input node and its source, substrate and gate connected to Vdd, a second CMOS inverter comprised of a third NMOS FET and a third PMOS FET, the source and substrate of the third NMOS FET connected to said input node, the source and substrate of the third PMOS FET being connected to Vdd, the drains of the third PMOS FET and of the third NMOS FET being connected at a junction to the gate of the second PMOS FET, and the gates of the third PMOS FET and of the third NMOS FET being connected to Vss.

5,910,875

DEVICE FOR PREVENTIVE DETECTION OF FAULTS WITH RECOGNITION OF THE TYPE OF LOAD

Simon Tian, Grenoble, and Jean-Marc Kasbarian, Marseille, both of France, assignors to Schneider Electric SA, France

Filed Aug. 5, 1997, Appl. No. 905,959

Claims priority, application France, Sep. 3, 1996, 96 10980

Int. Cl.[6] H02H *3/26*

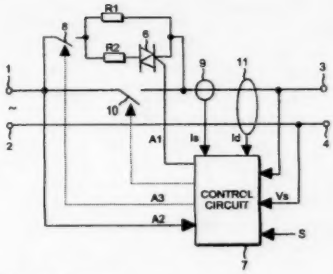
U.S. Cl. 361—78 **13 Claims**

1. A device for preventive detection of faults in a load connected to an AC supply voltage, comprising:

a first switch connectable to an AC supply voltage;

a control circuit connectable to the same AC supply voltage comprising:

load detection means,



fault detection means,

voltage measuring means,

load current measuring means, and

test means;

said test means for temporarily connecting said first switch to the same AC supply voltage for a half-cycle of AC voltage during a first test phase so that said voltage measuring means measures an output voltage of said first switch, and said load current measuring means measures a current of a load; and

said load detection means comprising impedance calculating means to calculate an impedance of the load based on a value of voltage from said voltage measuring means and a value of current from said load current measuring means, and comparing means for comparing the calculated impedance of the load with a plurality of predetermined impedance curves that represent a plurality of load types so that said load detection means identifies the load.

5,910,876

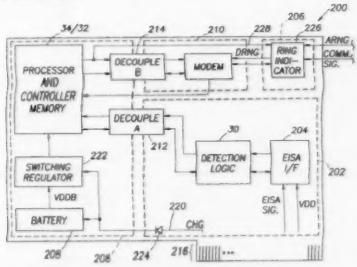
PRINTED CIRCUIT BOARD HAVING CONDUCTORS WHICH CAN BE DECOUPLED FOR ISOLATING INTACTIVE INTEGRATED CIRCUITS CONNECTED THERETO

Dinesh Sharma, Tomball; Gordon R. Clark, and Lawrence E. Alton, both of The Woodlands, all of Tex., assignors to Compaq Computer Corporation

Continuation of application No. 08/695,829, Aug. 16, 1996, Pat. No. 5,796,566. This application Jun. 12, 1998, Appl. No. 97,090.

Int. Cl.[6] H02H *3/24*

U.S. Cl. 361—86 **24 Claims**



1. A printed circuit board comprising:

an edge connector configured to be coupled to an expansion bus;

an integrated circuit mounted on the printed circuit board, the integrated circuit coupled to the edge connector and operable to snoop memory operations on the expansion bus and cause selected memory data to be stored in a memory on the printed circuit board;

a first power conductor extending across a first portion of said printed circuit board, the first power conductor coupled to the integrated circuit;

a second power conductor extending across a second portion of said printed circuit board, the second power conductor coupled to the integrated circuit; and

a decoupling unit connected between said first power conductor and said integrated circuit, wherein said decoupling unit causes said first power conductor to be decoupled from said integrated circuit during times in which voltage within said first power conductor is less than voltage within said second power conductor.

5,910,877

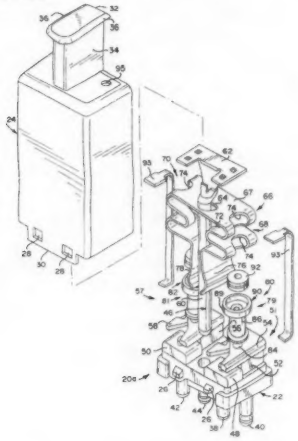
LINE PROTECTOR FOR A COMMUNICATION CIRCUIT

Jamie M. Paske, Oak Lawn, and Richard T. Kaczmarek, Chicago, both of Ill., assignors to Reltec Corporation, Mayfield Heights, Ohio

Filed Nov. 17, 1997, Appl. No. 971,284

Int. Cl.[6] H02H *1/00*

U.S. Cl. 361—119 **19 Claims**



1. A line protector for a communication circuit, said line protector comprising: an incoming conductive member; a ground member; a biasing member in displaceable contact with said ground member and contractable with said incoming conductive member; an electrically responsive thermal device conductively coupled to said incoming conductive member and disposed between said biasing member and said incoming conductive member. said electrically responsive thermal device maintaining said biasing member and said incoming conductive member in spaced, nonconducting relation while said electrically responsive thermal device remains substantially intact, whereby an excessive current conducted along said incoming conductive member causes said electrically responsive thermal device to deform allowing said biasing member to be displaced toward said incoming conductive member in wiping contact along said ground member and into contact with said incoming conductive member to form at least a portion of a conductive path from said incoming conductive member to said ground member.

5,910,878

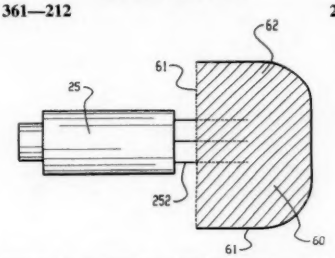
METHOD AND APPARATUS FOR PROTECTING ELECTRICAL DEVICES FROM STATIC ELECTRICITY

Alfred A. Mello, and Donald L. Pearl, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1997, Appl. No. 883,488

Int. Cl.[6] H05F *1/00*

U.S. Cl. 361—212 **21 Claims**



1. Apparatus for protecting electrical devices with extended leads from damaging electrostatic discharge comprising at least one shorting conductor comprising a bundle of conductive filaments and a foraminous web defining an outer surface of said bundle.

5,910,879

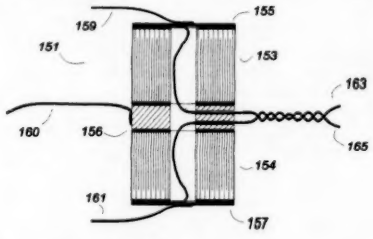
3- AND 4-TERMINAL CAPACITORS WITH "FARADAY-SHIELDED" CONNECTIONS

Edward Herbert, 1 Dyer Cemetery Rd., Canton, Conn. 06019-2029

Provisional application No. 60/621,121, Jun. 27, 1996. This application Jun. 16, 1997, Appl. No. 876,299.

Int. Cl.[6] H01G *4/228;4/232*

U.S. Cl. 361—306.1 **13 Claims**



12. A capacitor comprising

at least a first capacitor element having a first electrode terminated on a first metal end cap and a second electrode terminated on a second metal end cap the at least a first capacitor element further having at least one hole through the capacitor element going out of the capacitor;

a first termination for connecting to an external circuit bonded to at least one of the first metal end cap and the second metal end cap outside of the at least one of the first metal end cap and the second metal end cap, and

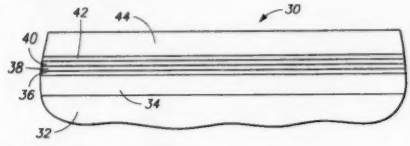
a second termination for connecting to the external circuit bonded to at least one of the first metal end cap and the second metal end cap within the at least one of the first metal end cap and the second metal end cap and passing out of the capacitor through the at least one hole through the capacitor element.

5,910,880

SEMICONDUCTOR CIRCUIT COMPONENTS AND CAPACITORS

Scott Jeffrey DeBoer, Boise; F. Daniel Gealy, Kuna, and Randhir P. S. Thakur, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 20, 1997, Appl. No. 916,771
Int. Cl.[6] H01G 4/06;4/20
U.S. Cl. 361—311 5 Claims



5. A capacitor comprising:

a first capacitor plate;

a first tantalum-comprising layer over the first capacitor plate;

a second tantalum-comprising layer over the first tantalum-comprising layer, the second tantalum-comprising layer consisting essentially of tantalum and nitrogen; and

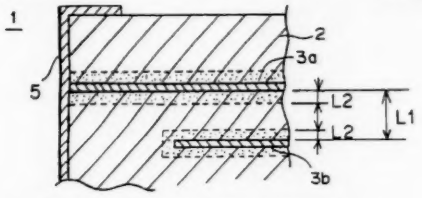
a second capacitor plate over the second tantalum-comprising layer.

5,910,881

MULTILAYERED ELECTRONIC ELEMENT

Yasushi Ueno, Takefu, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 13, 1997, Appl. No. 874,560
Claims priority, application Japan, Jun. 14, 1996, 8-154211
Int. Cl.[6] H01G 4/06
U.S. Cl. 361—313 18 Claims



1. A multilayered electronic element comprising:

a ceramic body;

a plurality of internal electrodes arranged in the ceramic body separated by ceramic layers;

the internal electrodes being made of a base metal and the base metal being diffused into the ceramic layers such that a distance of diffusion is 3–30% of an interval between the internal electrodes.

5,910,882

PORTABLE ELECTRONIC DEVICE FOR USE IN COMBINATION PORTABLE AND FIXED MOUNT APPLICATIONS

Gary L. Burrell, Olathe, Kans., assignor to Garmin Corporation, Olathe, Kans.

Filed Nov. 14, 1995, Appl. No. 557,521
Int. Cl.[6] G06F 1/16; H05K 5/00
U.S. Cl. 361—681 12 Claims

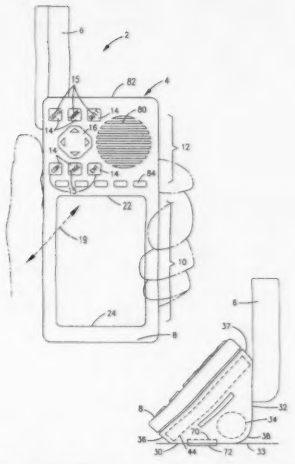
1. A portable global positioning device capable of mounted and hand held operation, the device comprising:

a first side;

a second side;

a first flat edge joining the first side and the second side;

a third side;



a second flat edge joining the first side and the third side;

a round edge joining the second side and the third side;

a display screen positioned on one of the first, second, and third sides; and

a control panel positioned on one of the first, second, and third sides on which the display screen is positioned;

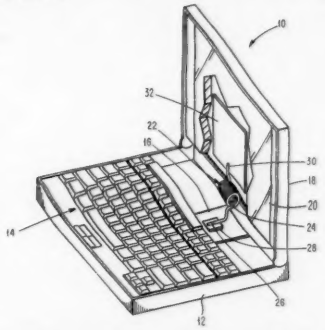
wherein the first, second, and third sides form a triangular-shaped cross-section.

5,910,883

HINGE INCORPORATING A HELICALLY COILED HEAT PIPE FOR A LAPTOP COMPUTER

Thomas Mario Cipolla, Katonah; Paul William Coteus, Yorktown Heights, and Lawrence Shungwei Mok, Brewster, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1997, Appl. No. 907,119
Int. Cl.[6] G06F 1/20; H05K 7/20
U.S. Cl. 361—687 18 Claims



1. An arrangement for dissipating heat generated by at least one electronic component of a portable personal computer having a bottom housing for a keyboard and a display panel hingedly connected to a rear edge of said housing, said at least one electronic component being located in said housing, said heat dissipating arrangement comprising a linear hinge structure extending between said housing and said display panel to facilitate pivotable movement between said housing and said display panel, said linear hinge structure consisting of a helically coiled length of tubing forming a heat pipe having windings wound along an axial length constituting the hinge connection between said housing and said

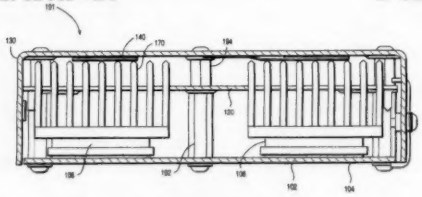
display panel, one end of said helically coiled heat pipe being connected to said at least one heat-generating electronic component and an opposite end of said coiled heat pipe being connected to a heat spreader at a rear surface of said display panel for conducting heat from said electronic components to said heat spreader.

5,910,884

HEATSINK RETENTION AND AIR DUCT ASSEMBLY

Jose Arturo Garza, Austin; Dales Morrison Kent; Ciro Neal Ramirez, both of Round Rock, and Rajeev Ranjan Sinha, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 3, 1998, Appl. No. 146,658
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—690 **19 Claims**



1. A heat dissipation assembly comprising:

an air duct cover including a major panel, first and second side panels, and a spring, wherein said major panel is dimensioned to substantially cover a printed circuit card, said circuit card comprising an integrated circuit affixed to a printed circuit board, and wherein said first and second side panels extend approximately perpendicularly from opposing ends of said major panel to form a bracket, wherein a depth of said bracket is suitable for receiving said circuit card and a heat sink positioned in close contact with said integrated circuit, and further wherein said spring is affixed to an interior surface of said major panel and positioned wherein said spring is suitable for retaining said heat sink in said close contact with said integrated circuit; and

a template dimensioned for being received within said bracket and wherein said template is attached to said major panel with spacer structures such that said template is substantially parallel to and displaced from said major panel, and further wherein said template includes a template aperture dimensioned and positioned within said template to circumscribe said heat sink.

5,910,885

ELECTRONIC STACK MODULE

Alan M. Gulachenski, West Millbury, Mass.; Joseph Praino, Washington Township, N.J., and Jack Seidler, Flushing, N.Y., assignors to White Electronic Designs Corporation, Phoenix, Ariz.

Filed Dec. 3, 1997, Appl. No. 984,001
Int. Cl.[6] H01R *9/09;4/02*
U.S. Cl. 361—774 **33 Claims**

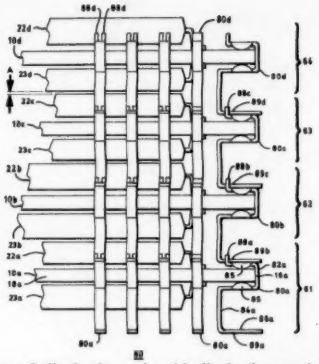
1. An electronic circuit assembly, comprising:

a substrate comprising upper and lower surfaces, said substrate further comprising a first set of mounting pads disposed upon at least one of said substrate surfaces;

at least one electronic device comprising a plurality of electrical leads, said device leads being electrically connected to said first set of mounting pads;

a plurality of connector pads disposed upon at least one of said substrate surfaces;

electrical conduction means extending from at least one of said first set of mounting pads to at least one of said plurality of connector pads; and,



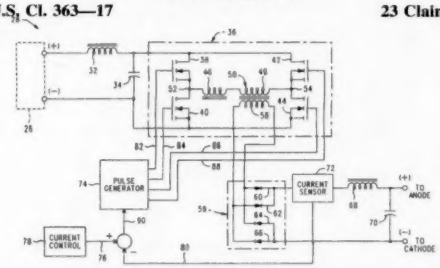
a plurality of clip leads, each said clip lead comprising a clip section, a standoff section, and a mounting section, said clip section configured to frictionally engage upper and lower substrate surfaces so as to retain said clip lead to said substrate, said clip section comprising at least one tab extending at an angle to said substrate surface, said mounting section comprising an interlocking feature configured so as to releasably mate with said at least one tab each said clip lead emplaced so as to be in electrical communication with a corresponding said connector pad.

5,910,886

PHASE-SHIFT POWER SUPPLY

Charles Coleman, Fort Collins, Colo., assignor to Sierra Applied Sciences, Inc., Boulder, Colo.

Filed Nov. 7, 1997, Appl. No. 966,489
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—17 **23 Claims**



1. A power supply for placing a voltage potential across a first electrode and a second electrode, said first and second electrodes being positioned within a process chamber, comprising:

a direct current source;

a phase-shift converter circuit having an input and an output, the input of said phase-shift converter circuit being connected to said direct current source;

a rectifier having an input and an output, the input of said rectifier being connected to the output of said phase-shift converter circuit, the output of said rectifier being connected to the first and second electrodes;

average current sensing means operatively associated with the output of said rectifier for producing an average current feedback signal indicative of a time averaged output current in said rectifier; and

control means operatively associated with said phase-shift converter circuit and said average current sensing means and responsive to the average current feedback signal produced by said average current sensing means for controlling the phase-shift converter circuit.

5,910,887
APPARATUS FOR CONTROLLING SWITCHING FREQUENCY OF SMPS TRANSFORMER FOR VIDEO DISPLAY APPLIANCE

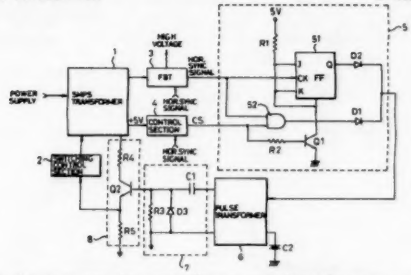
Sang Yeal Kim, Kyoungsangnam-Do, Rep. of Korea, assignor to LG Electronics, Inc., Seoul, Rep. of Korea

Filed Dec. 10, 1997, Appl. No. 988,043

Claims priority, application Rep. of Korea, Dec. 12, 1996, P96-64910

Int. Cl.[6] H02M *3/335;* **H01J** *29/70*

U.S. Cl. 363—21 **2 Claims**



1. An apparatus for controlling a switching frequency of an SMPS transformer for a video display appliance having a flyback transformer for converting a voltage outputted from the SMPS transformer into a high voltage in accordance with a horizontal sync signal inputted thereto, the apparatus comprising:

a control section for outputting a control signal in accordance with the horizontal sync signal inputted thereto;

a dividing section for dividing the horizontal sync signal in accordance with the control signal from the control section;

a pulse transformer for outputting a predetermined pulse signal in accordance with an output pulse signal of the dividing section;

a differentiation section for differentiating the pulse signal outputted from the pulse transformer to eliminate a negative pulse component of the pulse signal;

a sawtooth sync generating section for generating a sawtooth sync signal by performing a switching operation in accordance with an output signal of the differentiation section; and

a switching control section for outputting the switching frequency for a switching operation of the SMPS transformer in accordance with the sawtooth sync signal from the sawtooth sync generating section.

5,910,888
PLANT FOR TRANSMITTING ELECTRIC POWER

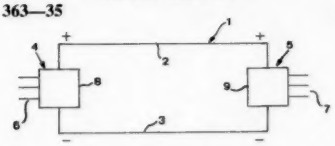
Lars Weimers, Ludvika, Sweden, assignor to Asea Brown Boveri AB, Vasteras, Sweden

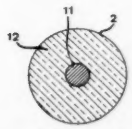
Filed Aug. 29, 1997, Appl. No. 921,079

Claims priority, application Sweden, Mar. 24, 1997, 9701066

Int. Cl.[6] H02J *3/36*

U.S. Cl. 363—35 **6 Claims**





1. A plant for transmitting electric power between at least two alternating voltage networks, each connected through a station to a direct voltage network for high voltage direct current, each station being adapted to transmit electric power between the direct voltage network and the respective alternating voltage network, said plant comprising:

at least one voltage-stiff VSC converter in each station adapted to convert direct voltage to alternating voltage and the alternating voltage to direct voltage, wherein said electric power is fed in both directions in said direct voltage network between the stations; and

at least one cable with an insulating layer of polymer base surrounding a conductor, said cable forming the direct voltage network connecting the stations.

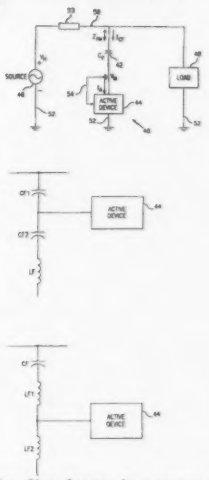
5,910,889
HYBRID ACTIVE POWER FILTER WITH PROGRAMMED IMPEDANCE CHARACTERISTICS

Einar Larsen, Charlton, and Robert Delmerico, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of application No. 08/756,871, Nov. 26, 1996, Pat. No. 5,737,198. This application May 29, 1997, Appl. No. 864,999.

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—40 **10 Claims**



1. A hybrid active filter for use in a power system, the power system having a source supplying power to a load, comprising:

a passive device including a first component, a second component and a third component; and

an active device connected to said passive device at a junction between said first component and said second component, said passive and active devices connected in shunt with the power system.

5,910,890
CIRCUIT FOR CONTROLLING APPLICATION OF ELECTRICITY TO A COIL OF AND ELECTRIC CURRENT SWITCHING APPARATUS

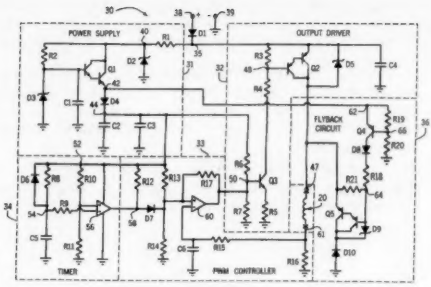
James E. Hansen, Oak Creek; Michael E. Bauer, Wauwatosa; Dale L. Gass, Brown Deer, and William J. Janutka, West Allis, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 12, 1998, Appl. No. 24,373

Int. Cl.[6] H02M *1/12;* **H01H** *9/00*

U.S. Cl. 363—41 **15 Claims**

1. A control circuit for an electrical switching device having a set of contacts which are operated by a electromagnetic coil, said control circuit comprising:



first and second input terminals to receive a control signal for operating the electrical switching device;

a first transistor having a conduction path connected in series with the electromagnetic coil between the first and second control terminals, the first transistor having a control terminal;

a controller which generates a series of pulses that are applied to the control terminal of the first transistor, wherein the series of pulses biases the first transistor to apply a first level of current to the electromagnetic coil during a defined period of time and thereafter the first transistor is biased to apply a second level of current to the electrocmagnetic coil, where the first level is greater than the second level; and

a flyback/decay circuit having a first diode and a second transistor connected in series and to the electromagnetic coil wherein the second transistor is biased by the control signal to provide a first voltage drop for current produced by the electromagnetic coil during intervals between each pulse of the series of pulses, upon removal of the control signal the second transistor is biased to provide a second voltage drop for current produced in the electromagnetic coil, in which the second voltage drop is greater than the first voltage drop.

5,910,891

POWER SUPPLY WITH POWER FACTOR CORRECTION CIRCUIT

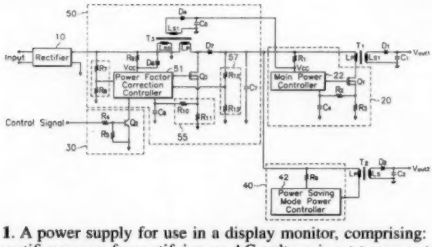
Sang-Soo Jo, Kyungki-Do, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 14, 1997, Appl. No. 970,783

Claims priority, application Rep. of Korea, Nov. 14, 1996, 1996 54128

Int. Cl.[6] H02M *5/42*

U.S. Cl. 363—89 **14 Claims**



1. A power supply for use in a display monitor, comprising:

rectifier means for rectifying an AC voltage input to generate a DC voltage;

switching power circuit means including a main power controller for controlling a voltage applied thereto, and for supplying main power to a microcomputer in said display monitor;

a power saving control circuit which is switched in response to a power saving control signal generated by said microcomputer in said display monitor;

power saving mode power circuit means for supplying power to said microcomputer during a power saving mode; and

a power factor correction circuit disposed between said rectifier means and said switching power circuit means for correcting a power factor of said DC voltage, for supplying to said switching power circuit means a corrected power factor voltage comprising a driving voltage to said main power controller, and for cutting off said driving voltage supplied to said main power controller during said power saving mode.

5,910,892

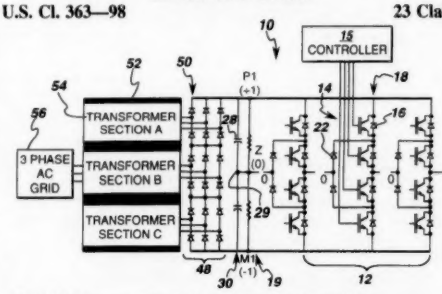
HIGH POWER MOTOR DRIVE CONVERTER SYSTEM AND MODULATION CONTROL

James Patrick Lyons, Niskayuna; Vlatko Vlatkovic, Schenectady, both of N.Y.; Paul Martin Espelage, Salem, Va., and Albert Andreas Maria Esser, Delafield, Wis., assignors to General Electric Company, Schenectady, N.Y.

Provisional application No. 60/063,223, Oct. 23, 1997. This application Jun. 30, 1998, Appl. No. 108,041.

Int. Cl.[6] H02M *7/5387*

U.S. Cl. 363—98 **23 Claims**



1. A high power motor drive converter comprising:

a three level neutral point clamped (NPC) output power conversion stage including switches for supplying power to an AC drive motor;

a split series connected DC capacitor bank coupled in parallel with the NPC output power conversion stage;

a controller for selecting switch positions for controlling the NPC output power conversion stage and controlling a neutral voltage balance of the DC capacitor bank by using space vector modulation and predictive charge calculations;

an input power conversion stage coupled in parallel to the capacitor bank.

5,910,893

NUMERICAL CONTROL METHOD AND NUMERICAL CONTROL SYSTEM USING THE SAME

Ietoshi Itoh, Tokyo, Japan, assignor to Sony Corporation, Japan

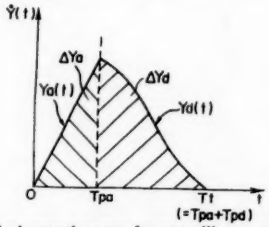
Continuation of application No. 08/305,609, Sep. 14, 1994, Pat. No. 5,675,496. This application Jan. 23, 1997, Appl. No. 792,851.

Claims priority, application Japan, Sep. 16, 1993, P05-230252

This patent is subject to a terminal disclaimer

Int. Cl.[6] G05B *19/18*

U.S. Cl. 364—167.02 **2 Claims**



2. A numerical control system for controlling an acceleration and declaration of a controlled object based on a target function (Y(t)), comprising:

an input unit for receiving as inputs a value of change (ΔY_r) and a normalized target function (y(t)), said target function (Y(t)) representing a position of said controlled object as a function of time;

a correction value calculation unit for calculating correction values (β,δ) based on said value of change (ΔY_r), and normalized target function (y)t));

a target function computation unit for computing the target function (Y(t)) based on the information from said input unit and said correction value calculation unit; and

means for obtaining said target function by multiplying said value of change (ΔY_r) with said normalized target function (y(t)) and with said corrections values (β,δ),

wherein an output of said target function computation unit is provided as an input to a servo control system for controlling the acceleration and deceleration of said controlled object.

5,910,894

SENSOR BASED ASSEMBLY TOOLING IMPROVEMENTS

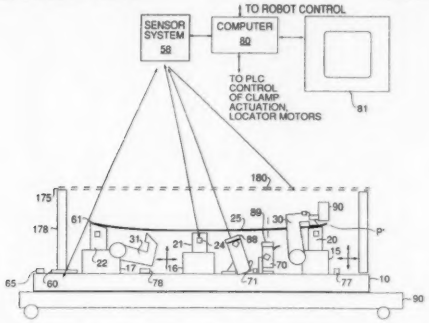
Timothy R. Pryor, Windsor, Canada, assignor to Sensor Adaptive Machines, Inc., Windsor, Canada

PCT No. PCT/US94/00398, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/16401, PCT Pub. Date Jul. 21, 1994

Continuation-in-part of application No. 08/002,384, filed as application No. PCT/CA92/0019920111, Jan. 11, 1992, abandoned. This PCT application Jan. 11, 1994, Appl. No. 481,479.

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—468.01 **39 Claims**



1. A method of joining sheet metal components to form an assembled sheet metal part comprising:

(a) providing assembly tooling comprising a base, a plurality of fixed hard tool locators fixedly mounted on said base, clamping means for holding said sheet metal components in position on said locators for assembly in said tooling, and means for joining said sheet metal components in said position on said locators for assembly to form an assembled sheet metal part in said tooling;

(b) supporting a plurality of sheet metal components on said locators in said position for assembly;

(c) actuating said clamping means to hold said components on said locators in said position for assembly;

(d) actuating said joining means to join said sheet metal components to form said assembled sheet metal part; and

(e) electro-optically sensing a plurality of locations of said assembled sheet metal part prior to removing said assembled sheet metal part from said locators.

5,910,895

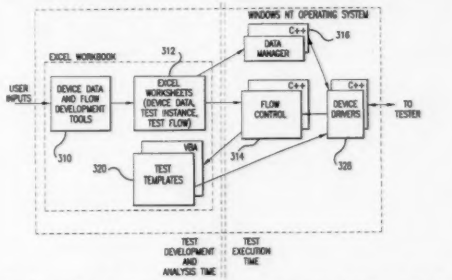
LOW COST, EASY TO USE AUTOMATIC TEST SYSTEM SOFTWARE

Daniel C. Proskauer, Newtown, and Pradeep B. Deshpande, Burlington, both of Mass., assignors to Teradyne, Inc., Boston, Mass.

Filed Jun. 13, 1997, Appl. No. 874,615

Int. Cl.[6] G01R *31/28;* **H01L** *21/66*

U.S. Cl. 364—468.28 **14 Claims**



7. A semiconductor test system of the type having a body holding electronic circuitry for generating and measuring a plurality of test signals and a computer work station providing control information to the electronic circuitry within the body, the semiconductor test system additionally having controlling software within the computer work station, the controlling software comprising:

a) a commercially available spread sheet program having a plurality of types of spread sheets, with a first portion of the plurality of types of spread sheets configured to hold data about a device under test and a second portion of the plurality of types of spread sheets configured to hold information influencing the steps performed during a test job on a semiconductor device;

b) a plurality of device driver program elements, each controlling a portion of the electronic circuitry within the body; and

c) program means for receiving data from the second portion of the plurality of types of spread sheets and controlling execution of a test job by providing data from spread sheets of the first type to selected ones of the plurality of program elements in an order dictated by data in spread sheets of the second type; and

d) a plurality of test program elements, each of which represents a function performed during one step of the test job, and wherein a spread sheet in the second portion of the plurality spread sheets is a flow sheet which comprises a plurality of rows, with at least a portion of the plurality of rows each including:

i) a reference to a test program element; and

ii) an indication of a classification to be assigned to the device under test if the referenced test, when performed, indicates a failure.

5,910,896

SHIPMENT TRANSACTION SYSTEM AND AN ARRANGEMENT THEREOF

Dean W. Hahn-Carlson, 1423 Highland Pkwy., St. Paul, Minn. 55116

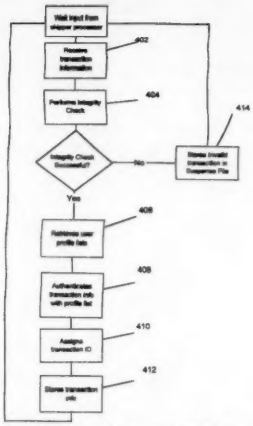
Filed Nov. 12, 1996, Appl. No. 748,243

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—479.01 **12 Claims**

1. In an environment of multiple shippers and carriers, a shipment transaction system for processing transaction information related to goods shipped from one of the shippers by one of the carriers, the shipment transaction system comprising:

means for accepting shipment information at the shipper's premises;



means for generating a set of transaction information in response to the shipment information, said transaction information including a code to identify the carrier, a code to identify the shipper, information associated with the goods to be shipped, and the time at which the shipment is initiated at the shipper's premises;

a central processor arrangement, located remote from the shipper's premises, responsive to the transaction information, storing an authorized profile list criterion, and determining whether the transaction information satisfies the authorized profile list criterion, wherein the authorized profile list criterion includes information about authorized users; and

means for informing the central processor arrangement of delivery of the goods by the carrier, the central processor arrangement being responsive to the informing means and using the transaction information and the authorized profile list criterion to audit the shipment transaction and payment thereof.

5,910,897

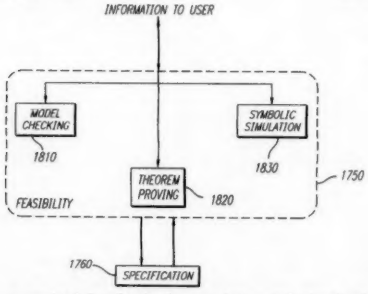
SPECIFICATION AND DESIGN OF COMPLEX DIGITAL SYSTEMS

Carlos Dangelo, Los Gatos, and Vijay Nagasamy, Union City, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of application No. 08/603,037, Feb. 16, 1996, abandoned, which is a continuation of application No. 08/252,231, Jun. 1, 1994, Pat. No. 5,493,508. This application Jul. 9, 1997, Appl. No. 890,174.

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—488 **20 Claims**



1. In a method for fabricating an integrated circuit chip, an iterative, interactive method of generating a formal, directly-executable specification for a complex digital system, comprising:

establishing a desired behavior for a complex digital system;

creating a formal specification for the complex digital system using a formal, directly-executable specification language; and

iteratively performing the steps of:

(a) examining for syntactical correctness of the formal specification;

(b) examining for logical consistency of the formal specification;

(c) examining for completeness of the formal specification;

(d) checking for correctness of the formal specification;

(e) comparing the desired behavior with the behavior described by the formal specification;

(f) determining the existence of at least one realizable implementation of the formal specification; and

(g) correcting any problems detected in steps (a)–(f) above by revising the formal specification;

until the formal specification is syntactically correct, logically consistent, correct and complete, reflects the desired behavior, and has at least one realizable implementation.

5,910,898

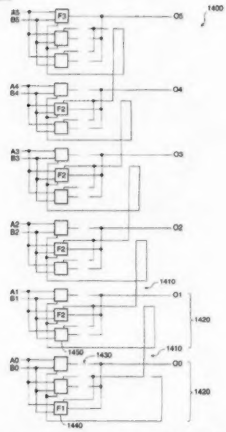
CIRCUIT DESIGN METHODS AND TOOLS

David L. Johannsen, San Gabriel, Calif., assignor to Viewlogic Systems, Inc., Marlboro, Mass.

Filed Dec. 14, 1995, Appl. No. 572,520

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—489 **15 Claims**



10. A method for verifying structural equivalence of a first circuit structure and a second circuit structure in the operation of a circuit design tool, said method comprising the steps of:

receiving a description of the first circuit structure and a description of the second circuit structure;

verifying that for each port/pin in said first description there is an equivalent port/pin in said second description;

verifying that for each port/pin in said second description there is an equivalent port/pin in said first description;

removing each delay gate and each time gate from said first structural description;

removing each delay gate and each time gate from said second structural description;

wherein each said delay gate includes an input and an output, said delay gate passing said input through to said output after a delay of one clock cycle, and

wherein each said time gate includes an input, an output, and a designated clock cycle, wherein said in put is passed through to said output in said designated clock cycle;

applying a set of replacement rules to said first structural description and said second structural description; and

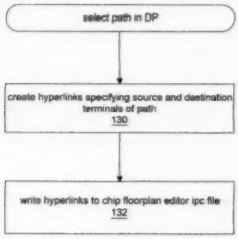
verifying equivalence of said first and second structural descriptions resulting from said applying step.

5,910,899

METHOD FOR PERFORMING FLOORPLAN TIMING ANALYSIS USING MULTI-DIMENSIONAL FEEDBACK IN A SPREADSHEET WITH COMPUTED HYPERLINKS TO PHYSICAL LAYOUT GRAPHICS AND INTEGRATED CIRCUIT MADE USING SAME

Carlo E. Barrientos, Round Rock, Tex., assignor to Advanced Micro Devices, Inc.

Filed Oct. 25, 1996, Appl. No. 736,920
Int. Cl.[6] G06H *17/50*
U.S. Cl. 364—491 **32 Claims**


select path in DP
create hyperlinks specifying source and destination terminals of path
130
write hyperlinks to chip floorplan editor ipc file
132

1. A computer-implemented method for aiding in the design of an integrated circuit floorplan, wherein said method is performed on a computer system comprising a display screen, an input device, and a processor, the method comprising:

receiving a floorplan comprising elements of an integrated circuit arranged across a layout space, said floorplan includes a plurality of nets which extend between a plurality of terminals arranged at specified coordinates within said physical layout space;

receiving timing constraints for at least a pair of said plurality of terminals;

calculating a net delay for a signal path, wherein said signal path comprises a portion of one of said plurality of nets, said portion extending between the pair of said plurality of terminals;

calculating a slack time as a function of said net delay and said timing constraints;

displaying on the display screen said slack time in a spreadsheet format; and

creating at least one hyperlink between information within said floorplan and information within said spreadsheet.

5,910,900

METHOD OF PRODUCING CACHE OPTIMIZED CODE FROM A CIRCUIT COMPILER

Steven T. Mangelsdorf, Fort Collins, Colo., assignor to Hewlett-Packard, Co., Palo Alto, Calif.

Filed Dec. 5, 1996, Appl. No. 759,585
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—578 **14 Claims**

START
702
SELECT FIRST ACYCLIC SET OF GATES
704
SCORE ALL NODES AND GATYES IN THE CURRENT ACYCLIC SET, INITALIZE CACHE OPTIMIZATION VARIABLES
706
SELECT A FIRST GATE FROM CURRENT ACYCLIC SET OF GATES AND WRITE CODE TO START CACHE OPTIMIZATION LOOP
708
WRITE CODE TO PROMOTE NODES TO REGISTERS
710
WRITE CODE TO MAKE SELECTED GATE
712
MARK SELECTED GATE AS WRITTEN, UPDATE NODE AND GATE SCORES, UPDATE CACHE OPTIMIZATION VARIABLES
714
IS THERE ANOTHER GATE IN THE CURRENT ACYCLIC SET?
716
YES
SELECT ANOTHER GATE FROM CURRENT ACYCLIC SET OF GATES
718
NO
720
WRITE CODE TO END CACHE OPTIMIZATION LOOP AND ITERATE OVER ACYCLIC SET
722
IS IT TIME TO START A NEW CACHE OPTIMIZATION LOOP?
NO
YES
726
SELECT NEXT ACYCLIC SET OF GATES
730
YES
IS THERE ANOTHER ACYCLIC SET OF GATES?
732
NO
734
WRITE CODE TO END CURRENT CACHE OPTIMIZATION LOOP AND START A NEW CACHE OPTIMIZATION LOOP, REINITIALIZE CACHE OPTIMIZATION VARIABLES
A

1. A computer operable method for increasing the efficiency of computer code generated by a circuit compiler for simulating digital logic circuits on a computer, comprising the steps of:

(a) generating computer code for execution on a computer with an instruction cache which simulates the operation of a digital logic circuit;

(b) dividing said computer code into a plurality of segments comprised of a plurality of computer instructions wherein said plurality of computer instructions may be completely stored in said instruction cache; and

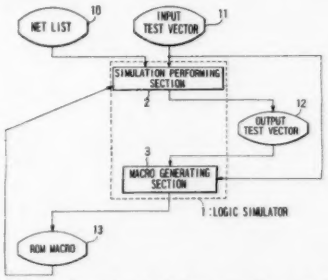
(c) generating computer code which causes each of said segments to be executed a plurality of times, wherein each of said plurality of times said segment operates on a plurality of bits of a variable.

5,910,901

LOGIC SIMULATOR

Naoki Yamada, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 15, 1997, Appl. No. 783,564
Claims priority, application Japan, Jan. 19, 1996, 8-007627
Int. Cl.[6] G06F *9/455;17/50*
U.S. Cl. 364—578 **15 Claims**



1. A logic simulator for simulating operations of a logic circuit composed of a plurality of logic elements, the logic simulator comprising:

a simulation performing section which, based on input signal data representing input signals of said logic circuit and circuit data representing the functions of said plurality of logic elements and the states of connection between said logic elements, outputs output signal data representing simulated signals outputted from said logic circuit when supplied with said input signal data; and

a ROM macro generating section which, based on said input signal data and said output signal data, outputs output signal data corresponding to said input signal data when supplied with said input signal data,

wherein said circuit data includes data assigning a ROM macro representing a portion of said logic circuit, and said simulation performing section simulates signals outputted from said logic circuit by using output signal data obtained by the assigned ROM macro.

5,910,902

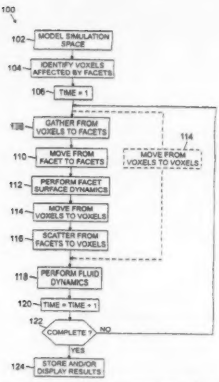
COMPUTER SIMULATION OF PHYSICAL PROCESSES

Kim Molvig, Concord; Hudong Chen, Newton; Christopher M. Teixeira, Cambridge; Stephen Remondi, Reading; David Lawrence Hill, Somerville, all of Mass.; Fongyan Gang, San Diego, Calif.; Ales Alajbegovic, Plymouth, Mich., and James E. Hoch, Jr., Harvard, Mass., assignors to Exa Corporation, Lexington, Mass.

Filed Mar. 28, 1997, Appl. No. 829,448
Int. Cl.[6] G06F *15/50*
U.S. Cl. 364—578 **20 Claims**

1. A computer-implemented method for simulating a physical process, comprising the steps of:

(1) storing in a memory state vectors for a plurality of voxels, the state vectors comprising a plurality of entries that correspond to particular momentum states of a plurality of possible momentum states at a voxel;



(2) storing in a memory a representation of at least one surface;

(3) performing interaction operations on the state vectors, the interaction operations modelling interactions between elements of different momentum states;

(4) performing surface interaction operations which model interactions between the surface and elements of at least one voxel near the surface, wherein:

(a) the elements have a tangential momentum relative to the surface,

(b) the surface interaction operations retain at least a portion of the tangential momentum of the elements,

(c) the portion of tangential momentum retained corresponds to a friction parameter, and

(d) the friction parameter is varied based on changes in pressure near the surface; and

(5) performing move operations on the state vectors to reflect movement of elements to new voxels.

5,910,903

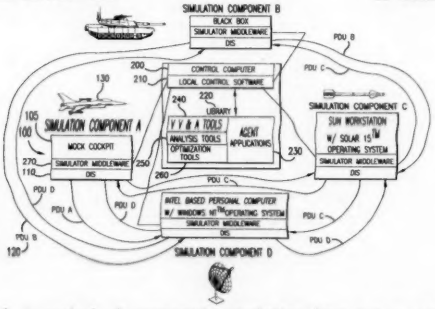
METHOD AND APPARATUS FOR VERIFYING, ANALYZING AND OPTIMIZING A DISTRIBUTED SIMULATION

Jerry M. Feinberg, Arlington; Christopher H. Johnson, Oakton, and Bruce W. Stalcup, Springfield, all of Va., assignors to PRC Inc., McLean, Va.

Filed Jul. 31, 1997, Appl. No. 903,733

Int. Cl.[6] G06F *9/455*

U.S. Cl. 364—578 **25 Claims**



1. A method of concurrently monitoring from one or more control computers a running distributed simulation on at least one simulation component running independently from said one or more control computers, said distributed simulation being formed by at least two simulation components running in hetrogeneous environments, comprising the steps of:

communicating instructions to said simulation component from said control computer; and

collecting data from said simulation component responsive to said communicated instructions.

5,910,904

DIGITAL FILTER APPARATUS

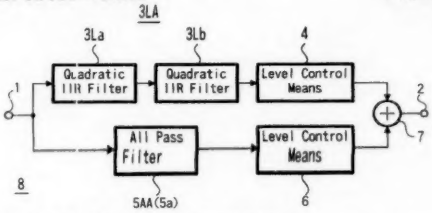
Yoichi Uramoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 26, 1997, Appl. No. 824,272

Claims priority, application Japan, Mar. 27, 1996, 8-072857

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—724.011 **6 Claims**



1. A digital filter apparatus comprising:

a first infinite impulse response digital filter for determining pass band frequencies for an input signal;

a second infinite impulse response digital filter for passing all frequencies of said input signal in a pass band;

first level control means for controlling an output signal from said first infinite impulse response digital filter;

second level control means for controlling an output signal from said second infinite impulse response digital filter; and

an adder for adding outputs from said first and second level control means and for supplying a result of the addition to an output terminal, wherein phase characteristics of said first and second infinite impulse response digital filters with respect to a frequency are made substantially coincident with each other, and control levels of said pair of level control means are adjusted so that an output level in a predetermined frequency range is controlled.

5,910,905

SYSTEM AND METHOD FOR DETECTION OF DISPERSED BROADBAND SIGNALS

Shie Qian, Austin, Tex., and Mark E. Dunham, Los Alamos, N. Mex., assignors to National Instruments Corporation, Austin, Tex.

Continuation-in-part of application No. 08/322,054, Oct. 12, 1994, abandoned. This application Nov. 8, 1996, Appl. No. 744,435.

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—724.08 **30 Claims**

1. A system for detecting the presence of a dispersed broadband signal, comprising:

a filter bank comprising a plurality of filters, wherein each of said plurality of filters is configured with a different set of time template parameters corresponding to a respective time template, wherein each of the different sets of time template parameters is generated from the time template equation:

$$w_k(t)=\cos\{2\pi(f_\infty t-2\sqrt{Kt})\}A(t)$$

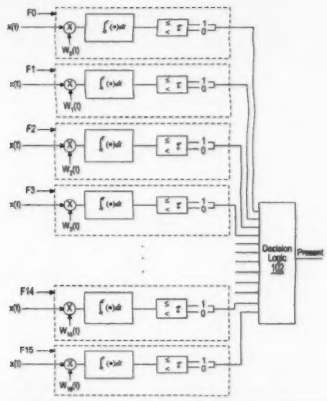
where A(t) is an amplitude;

K is the curvature constant for the dispersed broadband signal; and

the instantaneous frequency of the dispersed broadband signal asymptotically converges to f_∞;

wherein K is different for each of said different sets of time template parameters;

wherein each of said plurality of filters includes a first input which receives signals and compares said received signals



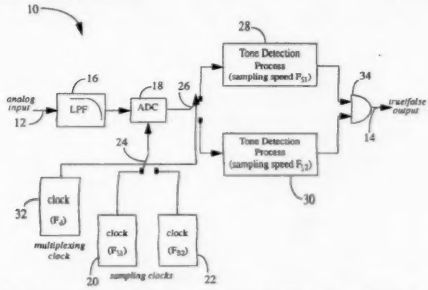
with said respective time template and generates a signal indicative of the presence of the dispersed broadband signal.

5,910,906

DIGITAL SINGLE-FREQUENCY TONE DETECTION IN PRESENCE OF ALIASES

Ronald Frederick Schmitt, Raleigh, N.C., assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 25, 1996, Appl. No. 686,353
Int. Cl.° G06F *7/38*
U.S. Cl. 364—724.09 **14 Claims**



1. A method for indicating presence of a tone in an input signal, comprising the steps of:

performing tone detection at more than one sampling rate over more than one period of time of the same input signal;

filtering the input signal substantially at or below a frequency which corresponds to initial overlap between first alias frequencies that result from a first sampling rate and second alias frequencies that result from a second sampling rate, whereby any tones at or above the filtering frequency are attenuated below threshold of the performed tone detection; and

indicating a tone is present when the performed tone detection detects the tone, in coincidence, at each of the sampling rates.

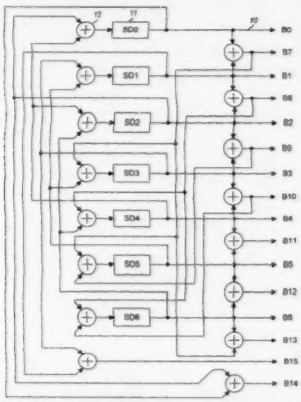
5,910,907

SHIFT REGISTER BASED PSEUDORANDOM NUMBER GENERATOR

Chih-Kang Chen, San Jose, and Alan S. Bradley, Alameda, both of Calif., assignors to C.K. Chen, Sunnyvale, Calif.

Filed Feb. 20, 1997, Appl. No. 801,396
Int. Cl.° G06F *1/02*; **H04L** *9/00*
U.S. Cl. 364—724.1 **20 Claims**

1. A pseudorandom number generator comprising:



a linear feedback shift register comprising exactly m storage devices, said m storage devices each having an input and an output, each output changing responsive to a clock signal common to said m storage devices, said linear feedback shift register implementing an m'th order generating polynomial;

exactly k output lines of said linear feedback shift register, k being greater than m;

interconnections among said exactly m storage devices of said linear feedback shift register so that said linear feedback shift register implements said m'th order generating polynomial, and further among said m storage devices and said exactly k output lines; and

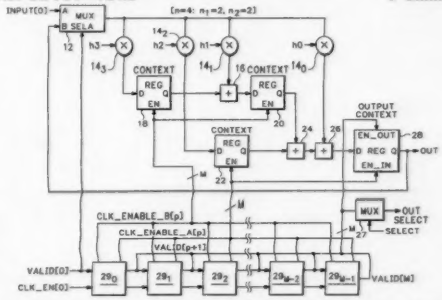
wherein said linear feedback shift register outputs exactly k bits on said exactly k output lines according to said m'th order generating polynomial synchronously with said clock signal.

5,910,908

FIR FILTER FOR PROGRAMMABLE DECIMATION

Keith R. Slavin, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Sep. 16, 1997, Appl. No. 931,408
Int. Cl.° G06F *17/10*
U.S. Cl. 364—724.1 **5 Claims**



1. An apparatus for programmable power of two decimation of an input signal comprising:

a FIR filter having a pair of inputs and an output, the input signal being applied to one of the inputs and the output providing a decimated input signal;

an output context register having an input coupled to receive the decimated input signal and having an output, the output being coupled to the other input of the FIR filter, and having m contexts of the decimated input signal stored representing all decimation by two results up to $\frac{1}{2}^m$; and

means for generating timing signals having as inputs an initial valid signal and an initial clock signal, the initial valid signal having a frequency at one-half the frequency of the initial clock signal and also being input as a select signal to the FIR filter to select either the input signal or the output from the output context register for processing by the FIR filter, and having as outputs the timing signals to control decimation by the FIR filter, to clock the decimated input signal into the output context register, and to select one of the m decimated input signals at the output of the output context register having a desired decimation factor 2^P where $0 \leqq p \leqq m$.

5,910,909

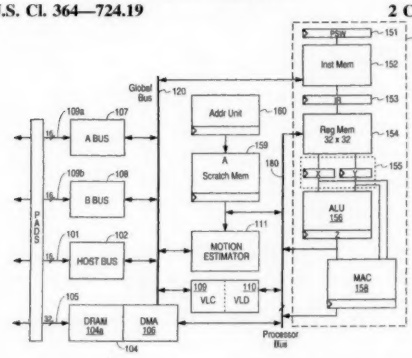
NON-LINEAR DIGITAL FILTERS FOR INTERLACED VIDEO SIGNALS AND METHOD THEREOF

Stephen C. Purcell, Mountain View, and Didier J. Le Gall, Los Altos, both of Calif., assignors to C-Cube Microsystems, Inc., Milpitas, Calif.

Division of application No. 08/520,319, Aug. 28, 1995. This application Jun. 23, 1997, Appl. No. 880,357.

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—724.19 **2 Claims**



1. A method for providing a temporal noise filter for a video signal, said video signal comprising pixels of successive frames of images displayable on a screen, said method comprising the steps of:

for position x in a screen, receiving a stream of pixel values x_0, x_1, . . . , X_T, corresponding to values of the pixel at said position x at time points 0, 1, . . . , T, wherein said time points correspond to arrivals of said successive frames of images; and

providing as an initial filter output value of said temporal noise filter y_o the value x_o;

thereafter, for each time point t:

(i) computing an absolute difference between y_{t-1}, being the filter output value of said temporal noise filter at time point t−1, and x_t, being the current value of pixel x at said time point t;

(ii) determining a weight a equalling (a) 0.5, when said absolute difference is less than a first threshold value T_1, (b) 1.0, when said absolute difference is greater than a second threshold value T_2, and (c) a value proportional to said absolute difference; and

(iii) providing as filter output value of temporal noise filter a value y_t having the value $x_t+a(y_{t-1}-x_{t-1})$.

5,910,910

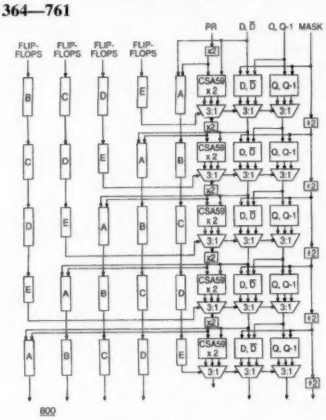
CIRCUIT AND METHOD FOR RAPID CALCULATION OF QUOTIENTS AND SQUARE ROOTS

Guy L. Steele, Jr., Lexington, Mass., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 23, 1997, Appl. No. 880,408

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—761 **60 Claims**



1. A circuit for determining a quotient of a divisor and a dividend represented in binary signals comprising:

a partial remainder data path having a plurality of serially-connected partial remainder stages including:

a first partial remainder stage in said data path for

receiving predetermined quantities including a first divisor, a first partial remainder, and first partial quotient values, and

producing as outputs a second partial remainder, a second divisor, and second partial quotient values, wherein said outputs are input to the one of said partial remainder stages immediately following said first partial remainder stage in the data path; and

successive partial remainder stages in the data path for

receiving as inputs a preceding divisor and a preceding partial remainder from the one of said partial remainder stages immediately preceding said partial remainder stage in the data path;

producing as outputs a successive partial remainder, a successive divisor, and successive partial quotient values, wherein said outputs are input to the partial remainder stage immediately following each of said partial remainder stages in the data path;

and

a plurality of fully overlapped quotient digit selection paths, each path comprising a plurality of serially-connected quotient digit stages, said selection paths including:

a first quotient digit selection path having

a first quotient digit stage receiving as inputs predetermined quantities including the first partial remainder, the first partial remainder plus the first divisor, and the first partial remainder minus the first divisor;

successive quotient digit stages receiving as an input a quotient digit selected from the quotient digit stage immediately preceding each of said quotient digit stages in the first quotient digit selection path and producing as an output a new quotient digit that is input into the quotient digit stage immediately following each of said quotient digit stages in the first quotient digit selection path, and

a final quotient digit stage in the first quotient digit selection path producing as an output a quotient digit for selecting new partial remainder candidates in a corresponding partial remainder stage in the partial remainder data path;

and

successively staggered quotient digit selection paths having

a first quotient digit stage receiving as an input a partial remainder output from the corresponding partial remainder stage in the series of partial remainder stages in the partial remainder data path,

successive quotient digit stages receiving as an input a quotient digit selected from the quotient digit stage immediately preceding each of said quotient digit stages in each selection path and producing as an output a new quotient digit that is input into the quotient digit stage immediately following each of said quotient digit stages in the selection path, and

a final quotient digit stage in each selection path producing as an output a quotient digit for selecting a new partial remainder in a corresponding partial remainder stage in the partial remainder data path.

5,910,911

SEMICONDUCTOR MEMORY AND PROCESS OF OPERATING THE SAME

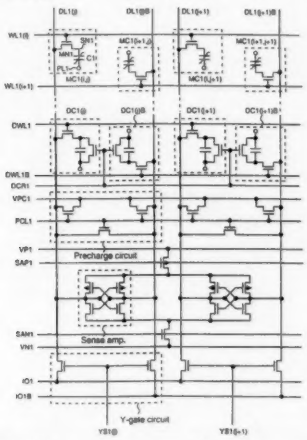
Tomonori Sekiguchi, Kokubunji; Hiroki Fujisawa, Ome; Takeshi Sakata, Kodaira; Takayuki Kawahara, Higashiyamato, and Katsutaka Kimura, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1996, Appl. No. 774,907

Claims priority, application Japan, Dec. 27, 1995, 7-340366

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **45 Claims**



29. A semiconductor memory comprising a memory cell having a capacitor using a ferroelectric film and a selection transistor, first and second data lines, an amplifier for amplifying a voltage between the first and second data lines, and a mode switching circuit, responsive to a recall or a store input, to change a power supply voltage to the amplifier and also to change a precharge voltage for each memory cell.

5,910,912

FLASH EEPROM WITH DUAL-SIDEWALL GATE

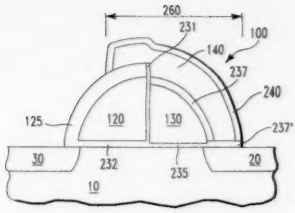
Louis Lu-Chen Hsu, Fishkill; Chang-Ming Hsieh, Fishkill, and Seiki Ogura, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Appl. No. 968,736

Int. Cl.[6] G11C *16/04*

U.S. Cl. 365—185.01 **6 Claims**

1. An EEPROM cell comprising a dual-gate transistor having a select gate, a floating gate and a control gate disposed on top of the



floating gate, said gates being disposed above a channel and between a source and drain, said select gate being separated vertically from said channel by a gate oxide, said floating gate being separated vertically from said channel by a tunnel oxide and said control gate being separated vertically from said floating gate by a second layer of insulator; characterized in that:

said select and floating gates are each formed from polysilicon sidewalls and are separated horizontally by a thin vertical insulating member;

said select gate is disposed adjacent said source and said floating gate is disposed adjacent said drain; and

said control gate extends over at least a portion of said select gate and said select gate is separated vertically from said control gate by a first predetermined dielectric layer and said floating gate is separated from said control gate by a second predetermined dielectric layer, said gate oxide and said first dielectric layer and said tunnel oxide and said second dielectric layer being related such that a predetermined program voltage on said control gate sufficient to cause electrons to tunnel through said tunnel oxide between said channel and said floating gate is insufficient to cause electrons to tunnel through said gate oxide.

5,910,913

NON-VOLATILE SEMICONDUCTOR MEMORY

Masataka Kato, Musashino; Tetsuo Adachi, Hachioji; Toshihiro Tanaka, Akigawa; Toshio Sasaki, Tokyo; Hitoshi Kume, Musashino, and Katsutaka Kimura, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of application No. 08/739,156, Oct. 30, 1996, Pat. No. 5,828,600, which is a division of application No. 08/164,780, Dec. 10, 1993, Pat. No. 5,592,415, which is a continuation-in-part of application No. 08/085,156, Jul. 2, 1993, abandoned. This application Jul. 30, 1998, Appl. No. 124,794.

Claims priority, application Japan, Jul. 6, 1992, 4-177973

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.11 **18 Claims**

8. A nonvolatile semiconductor memory device comprising:

a first array block including a plurality of first memory cells;

a second array block including a plurality of second memory cells;

a plurality of data lines;

a data latch coupled to said plurality of data lines and storing data;

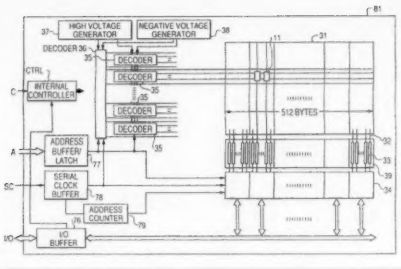
an address buffer storing an address signal supplied from an outside of said nonvolatile semiconductor memory device; and

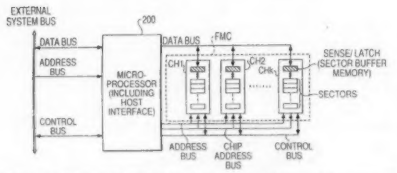
an address latch coupled to said address buffer and storing said address signal from said address buffer,

wherein each memory cell in said plurality of first and second memory cells is a one transistor type memory cell and has a floating gate and a control gate,

wherein each of said first and said second memory cells are coupled to a corresponding data line of said plurality of data lines, and

wherein when data of memory cells selected from said plurality of first memory cells in accordance with an address signal stored in said address buffer are erased, memory cells selected from said plurality of second memory cells in accordance





with an address signal stored in said address latch are written with data stored in said data latch.

5,910,914

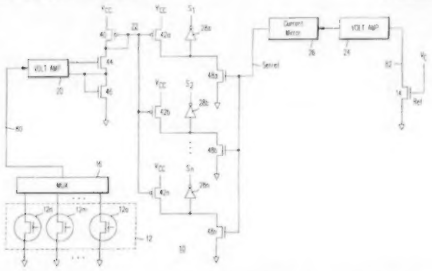
SENSING CIRCUIT FOR A FLOATING GATE MEMORY DEVICE HAVING MULTIPLE LEVELS OF STORAGE IN A CELL

Ping Wang, Saratoga, Calif., assignor to Silicon Storage Technology, Inc., Sunnyvale, Calif.

Filed Nov. 7, 1997, Appl. No. 965,834

Int. Cl.[6] G11C *16/06*

U.S. Cl. 365—185.21 **7 Claims**



1. A sensing circuit for sensing the state of a select floating gate memory cell, having a plurality of states stored therein, from a memory device, comprising:

a first line coupled to said memory device;

a first voltage amplifier means coupled to said first line and for generating a first output voltage;

a plurality of first current amplifier transistors for receiving said first output voltage and for generating a plurality of different first output currents in response thereto; each of said plurality of first current amplifier transistors comprises a transistor having a size different from one another, and having a gate for receiving said first output voltage, a first terminal supplied to a first voltage source, and a second terminal for generating one of said plurality of different first output currents;

means for generating a reference current;

a plurality of inverter means, each having a single input and a single output and for receiving one of said plurality of different first output currents and said reference current at its single input, and for generating an output signal in response thereto; said plurality of inventer means for generating a plurality of output signals; and

decoder means for receiving said plurality of output signals and for generating a decoded signal representative of said plurality of states stored in said select floating gate memory cell.

5,910,915

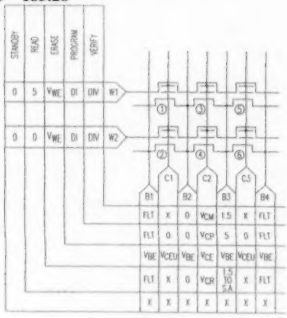
EEPROM WITH SPLIT GATE SOURCE SIDE INJECTION

Daniel C. Guterman, Fremont; Gheorghe Samachisa, San Jose; Yupin Kawing Fong, Fremont, and Eliyahou Harari, Los Gatos, all of Calif., assignors to Sandisk Corporation, Sunnyvale, Calif.

Division of application No. 08/639,128, Apr. 26, 1996, which is a continuation of application No. 08/193,707, Feb. 9, 1994, Pat. No. 5,776,810, which is a division of application No. 07/820,364, Jan. 14, 1992, Pat. No. 5,313,421. This application Apr. 23, 1998, Appl. No. 65,512.

Int. Cl.[6] H01C *21/8247*

U.S. Cl. 365—185.28 **7 Claims**



1. A memory array comprising:

a plurality of adjacent bit lines running in a first direction to form a corresponding plurality of columns;

a plurality of steering lines running in said first direction;

a plurality of word lines running in a second direction generally perpendicular to said first direction to form a corresponding plurality of rows;

a plurality of memory cells, each memory cell being associated with the intersection of one of said bit lines and one of said word lines;

programming circuitry for establishing voltage on said bit lines and said steering lines to cause data to be written into selected ones of said memory cells; and

verify circuitry for simultaneously verifying data of all cells written in a selected one of said bit lines of said memory, comprising:

circuitry for applying a verify voltage level to said plurality of word lines corresponding to correct data being written into memory cells of a selected one of said bit lines; and

a sense amplifier for sensing current in said selected bit line corresponding to a logical combination of the data values stored in memory cells of said bit line accessed during said verify operation.

5,910,916

FLASH-ERASABLE SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED RELIABILITY

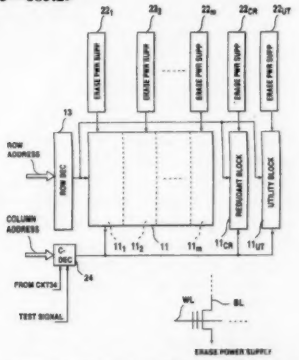
Takao Akaogi, Kawasaki; Yasushige Ogawa, Kasugai; Tatsuya Kajita, Kawasaki; Hisayoshi Watanabe, Kawasaki, and Minoru Yamashita, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of Japan

Division of application No. 07/978,976, Nov. 20, 1992, Pat. No. 5,761,127. This application Dec. 5, 1997, Appl. No. 986,339.

Claims priority, application Japan, Nov. 20, 1991, 3-304894; Nov. 29, 1991, 3-316682; Dec. 3, 1991, 3-319451; Dec. 27, 1991, 3-347343; Jan. 13, 1992, 4-4216; Mar. 18, 1992, 4-61730; Aug. 6, 1992, 4-210380; Sep. 18, 1992, 4-249958; Nov. 19, 1992, 4-310472

Int. Cl.[6] **G11C** *16/00*

U.S. Cl. 365—185.29 **7 Claims**



1. A flash-erasable semiconductor memory device comprising: a memory cell array including a plurality of memory cell transistors, each of said memory cell transistors comprising: an insulated floating gate provided on a semiconductor substrate with a separation therefrom for storing information in the form of electric charges; a gate insulation film provided on an upper major surface of said semiconductor substrate for separating said floating gate from said semiconductor substrate; a channel region defined in said semiconductor substrate in correspondence to said floating gate electrode; a source region and a drain region defined in said semiconductor substrate at both sides of said floating gate, said source region injecting carriers into said channel region such that said carriers are transported along said channel region while said drawing region collecting carriers that have been injected into said channel region at said source region and transported through said channel region; and a control electrode provided on said floating gate with a separation therefrom by said capacitor insulation film for controlling an injection of carriers from said channel region to said floating gate via said gate insulation film;

addressing means supplied with address data for selecting a memory cell transistor in said memory cell array;

writing means for writing information into said selected memory cell transistor;

reading means for reading information from said selected memory cell transistor; and

erasing means for erasing information from a plurality of memory cell transistors included in said memory cell array simultaneously, said erasing means erasing information by removing electric charges from said floating gate electrodes of said memory cell transistors by causing to flow a tunneling current through said gate insulation film;

wherein said memory cell array comprises a plurality of memory cell blocks each including at least one bit line to which a plurality of said memory cell transistors are connected;

said erasing means comprising a plurality of power supply units corresponding to said plurality of memory cell blocks, each of said power supply units being connected, when erasing information, to said memory cell transistors included in the corresponding memory cell block to induce a voltage difference between said floating gate and a part of said substrate including said source region, said drain region and said channel region with a magnitude sufficient to remove said electric charges from said floating gate; said power supply units providing an output current that is proportional to the number of the memory cells included in the corresponding memory cell block; and wherein said plurality of memory cell blocks include at least one redundant memory cell block including therein memory cell transistors that are selected as an alternative memory cell when a memory cell transistor selected by said addressing means is defective and at least one utility memory cell block including therein memory cell transistors that is used for testing said flash-erasable semiconductor memory device.

5,910,917

MULTI-CHIP IC MEMORY DEVICE WITH A SINGLE COMMAND CONTROLLER AND SIGNAL CLOCK GENERATOR

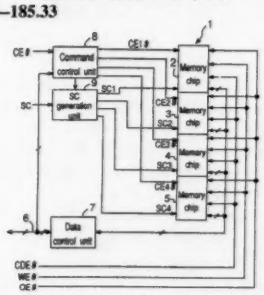
Tomoya Fukuzumi, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1998, Appl. No. 139,658

Claims priority, application Japan, Mar. 25, 1998, 10-077178

Int. Cl.[6] **G11C** *16/04;7/00*

U.S. Cl. 365—185.33 **5 Claims**



1. An IC memory device having a plurality of flash memory chips packaged in a multiple chip package, said IC memory device comprising:

a memory unit having a plurality of flash memory chips;

a data control unit for applying to each memory chip of said memory unit externally supplied command data, address data, and data to be stored to a said memory unit, and for outputting data read from said memory unit to an external device;

a command control unit for generating and applying a chip enable signal to each memory chip of said memory unit based on command data from an external source; and

a serial clock signal generator for generating a serial clock signal for applying to each memory chip based on an externally supplied serial clock signal;

wherein said serial clock signal generator applies the serial clock signal to either one of the memory chips of said memory unit selectively in a specific sequence at every specific pulse count of the externally supplied serial clock signal.

5,910,918

DATA WRITING CIRCUIT FOR A NONVOLATILE SEMICONDUCTOR MEMORY

Yasuaki Hirano, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

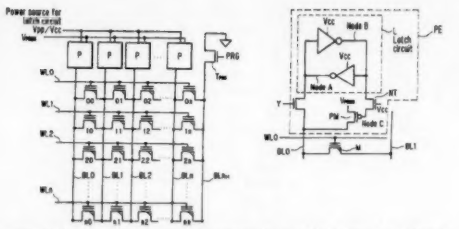
Filed Aug. 27, 1997, Appl. No. 924,417

Claims priority, application Japan, Dec. 25, 1996, 8-345765

Int. Cl.[6] **G11C** *16/04*

U.S. Cl. 365—189.01 **8 Claims**

1. A data writing circuit for a nonvolatile semiconductor memory comprising a virtually grounded NOR cell array com-



posed of floating gate type memory cells in which data is written in and erased based on the Fowler-Nordheim tunnel effect, comprising:

a transfer gate selecting a bit line of the virtually grounded cell array;

a latch circuit connected to the bit line via the transfer gate for latching the data to be written, given to the bit line; and

a switching circuit which is connected between the bit line and a program power source and is activated in accordance with the write data which has been latched by the latch circuit, to thereby supply the program power source to the bit line.

5,910,919

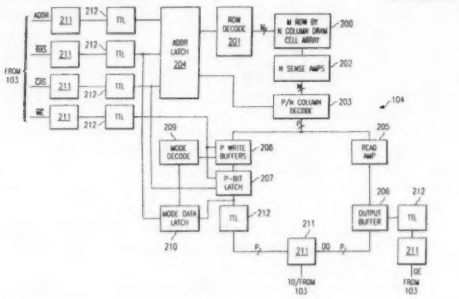
CIRCUITS, SYSTEMS AND METHODS FOR MODIFYING DATA STORED IN A MEMORY USING LOGIC OPERATIONS

Sudhir Sharma, Plano; Michael E. Runas, McKinney, and Robert M. Nally, Plano, all of Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

Division of application No. 08/424,653, Apr. 19, 1995, Pat. No. 5,732,024. This application Jul. 30, 1997, Appl. No. 903,390.

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—189.05 **6 Claims**



1. A memory system comprising:

an array of memory cells arranged in rows and columns;

circuitry for selectively performing logic operations on a bit of data stored in a selected said cell using a bit of received modifying data and a mode data bit for selecting a logic operation for performance, said circuitry for modifying during an OR logic operation writing said bit of modifying data into said cell when said bit of modifying data is a logic one and maintaining an existing bit stored in said cell when said bit of modifying data is a logic zero and during an AND operation writing said bit of modifying data into said cell when said bit of modifying data is a logic zero and maintaining said bit stored in said cell when said bit of modifying data is a logic one; and

circuitry for receiving and latching said mode data and said modifying data through a single port.

5,910,920

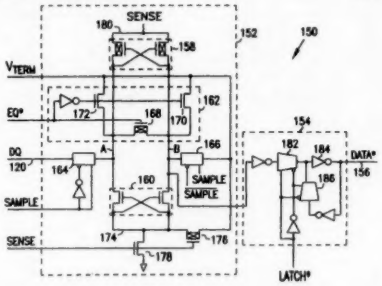
HIGH SPEED INPUT BUFFER

Brent Keeth, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of application No. 08/738,529, Oct. 28, 1996. This application Dec. 18, 1997, Appl. No. 993,397.

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **20 Claims**



1. An input buffer circuit adapted to be coupled to a high speed data bus, the input buffer circuit comprising:

a differential sense amplifier circuit selectively coupled to a data input and an internal output node that is adapted to be selectively coupled to a pre-selected voltage level that is a termination voltage of the high speed data bus;

an equilibration circuit connected to the differential sense amplifier circuit for equilibrating the differential sense amplifier circuit in response to an equilibrate signal;

isolation circuitry for selectively isolating the data input node from the differential sense amplifier circuit in response to a sample signal; and

sense amplifier activation circuitry for activating the differential sense amplifier circuit in response to a sense signal is a termination voltage of the high speed data bus.

5,910,921

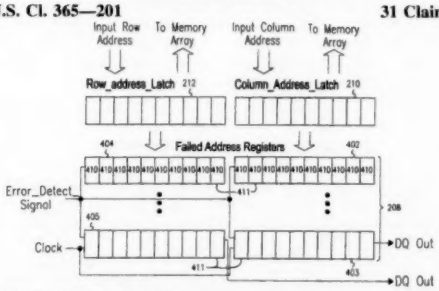
SELF-TEST OF A MEMORY DEVICE

Ray J. Beffa; William K. Waller; Eugene H. Cloud, all of Boise; Warren M. Farnworth, Nampo, and Leland R. Nevill, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Apr. 22, 1997, Appl. No. 838,010

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—201 **31 Claims**



21. An integrated circuit memory, comprising:

a memory array including a plurality of memory cells;

an error detection circuit including logic circuitry connected to receive a plurality of bits read from the memory array and to transmit an error detection signal when logical values of the plurality of bits are not alike;

an address latch coupled to the memory array and configured to store addresses to be used to access the memory array;

a failed address queue having at least one set of registers, each of the at least one set of registers storing memory array

addresses of defective ones of said plurality of memory cells in response to said error detecting signal;

a counter;

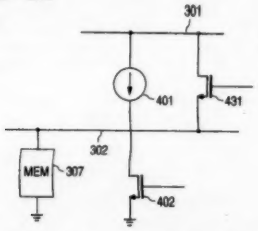
address change detection circuitry configured to receive a plurality of bits from the address latch and a corresponding plurality of bits from a first register in the failed address queue, and further configured to drive the counter when each of the plurality of bits in the address latch and the first register are alike.

5,910,922

METHOD FOR TESTING DATA RETENTION IN A STATIC RANDOM ACCESS MEMORY USING ISOLATED V_{CC} SUPPLY

Alan H. Huggins, Gilroy; William L. Devanney, Menlo Park, and Chuen-Der Lien, Los Altos Hills, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Aug. 5, 1997, Appl. No. 906,448
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—201 **10 Claims**



1. In an integrated circuit including a logic circuit and a memory circuit, a circuit for applying a data retention test to said memory circuit, comprising:

a first power supply terminal coupled to said memory circuit for providing power to said memory circuit;

a second power supply terminal coupled to receive a power supply voltage external to said integrated circuit;

a first NMOS transistor, having a gate terminal, a source terminal and a drain terminal, said source and drain terminals of said first NMOS transistor being coupled between said first and second power supply terminals, and said gate terminal biased such that said first NMOS transistor is conducting; and

a first PMOS transistor, having a gate terminal, a drain terminal and a source terminal, said gate terminal of said PMOS transistor receiving a first control signal, and said drain and source terminals of said PMOS transistor being coupled to said source and drain terminals of said NMOS transistor, respectively, such that when said first control signal is in an asserted state, said PMOS transistor becomes conducting to equalize a voltage across said drain and source terminals of said NMOS transistor.

5,910,923

MEMORY ACCESS CIRCUITS FOR TEST TIME REDUCTION

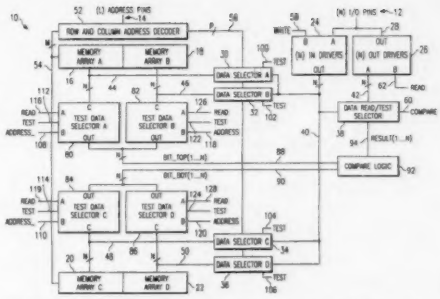
Brian L. Brown; David R. Brown, both of SugarLand; Daniel B. Penney, Houston, and Roger D. Norwood, SugarLand, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 23, 1997, Appl. No. 956,410
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—201 **6 Claims**

1. An integrated circuit comprising:

a. arrays of memory cells for storing bits of data;

b. input and output circuits for conveying data bits to and from the integrated circuit;



c. data bus leads extending between the arrays of memory cells and the input and output circuits, the data bus leads normally carrying the data bit signals between the arrays and input and output circuits;

d. compare logic circuits producing a test output signals in response to comparing data bit signals from the arrays during testing of the integrated circuit;

e. data read/test selector circuits selectively connecting the test output signals and the data bits from the arrays to the output circuits; and

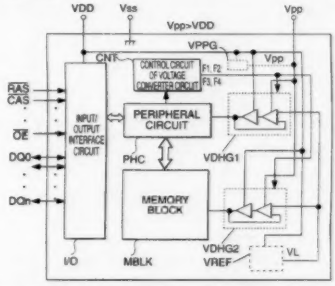
f. test bus leads extending between the arrays and the compare logic circuits, the test bus leads carrying data bit signals from the arrays to the compare circuits during test of the integrated circuit.

5,910,924

SEMICONDUCTOR INTEGRATED CIRCUIT INCLUDING VOLTAGE CONVERTER EFFECTIVE AT LOW OPERATIONAL VOLTAGES

Hitoshi Tanaka, Ome; Masakazu Aoki, Tokorozawa, and Kiyoo Itoh, Higashi-kurume, all of Japan, assignors to Hitachi, Ltd., and Hitachi ULSI Engineering Corp., both of Tokyo, Japan

Filed Aug. 26, 1997, Appl. No. 917,706
Claims priority, application Japan, Aug. 27, 1996, 8-224789
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—226 **23 Claims**



1. A semiconductor integrated circuit comprising a voltage converter and an internal circuit that receives an internal operating voltage output by the voltage converter, wherein the voltage converter includes:

a power receiving node coupled to an external voltage;

a first output node outputting said internal operating voltage, which has a smaller amplitude than that of the external voltage;

a first transistor having a source coupled to the external voltage and a drain coupled to the first output node;

a differential amplifier having:

a first MOSFET and a second MOSFET whose sources are coupled;

a first input node coupled to a reference voltage and being the gate of the first MOSFET;

a second input node coupled to the first output node and being the gate of the second MOSFET;

a second output node coupled to a first load and being the drain of the second MOSFET; and

a third output node coupled to a second load and being the drain of the first MOSFET; and

a push-pull circuit having:

a second transistor whose gate is controlled in response to a first current flowing in the first load;

a third transistor whose gate is controlled in response to a second current flowing in the second load; and

a fourth output node coupled to an output of the second transistor, an output of the third transistor, and a gate of the first transistor.

5,910,925

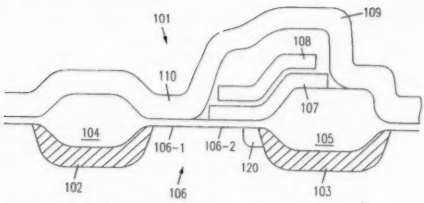
EEPROM WITH SPLIT GATE SOURCE SIDE INJECTION

Daniel C. Guterman, Fremont; Gheorghe Samachisa, San Jose; Yupin Kawing Fong, Fremont, and Eliyahou Harari, Los Gatos, all of Calif., assignors to Sandisk Corporation, Sunnyvale, Calif.

Division of application No. 08/639,128, Apr. 26, 1996, which is a continuation of application No. 08/193,707, Feb. 9, 1994, Pat. No. 5,776,810, which is a division of application No. 07/820,364, Jan. 14, 1992, Pat. No. 5,313,421. This application Apr. 23, 1998, Appl. No. 65,409.

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—230.01 **6 Claims**



1. A memory array comprising:

a plurality of adjacent bit lines running in a first direction to form a corresponding plurality of columns;

a plurality of word lines running in a second direction generally perpendicular to said first direction to form a corresponding plurality of rows;

a plurality of memory cells, each memory cell being associated with the intersection of one of said bit lines and one of said word lines;

a shift register comprising:

an data input port for receiving data to be stored by a selected one of said memory cells;

a plurality of storage elements, each associated with one of said word line, for storing said data to be stored by said memory cells; and

control circuitry for serially receiving a plurality of data values from said input port, each said data value associated with one of said word lines, and storing said plurality of data values for writing into corresponding ones of said plurality of memory cells along a selected bit line; and

programming circuitry for establishing voltages on said bit lines to cause one or more of said data values stored in said plurality of storage elements to be written into selected ones of said memory cells along said selected bit line.

5,910,926

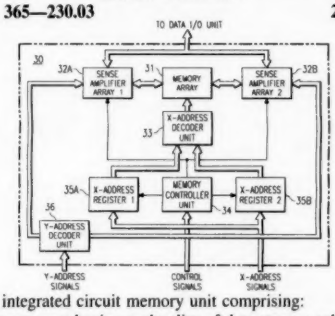
APPARATUS AND METHOD FOR A DYNAMIC RANDOM ACCESS ARCHITECTURE

Masashi Hashimoto, Tsukuba Ibaraki, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Provisional application No. 60/025,619, Sep. 6, 1996. This application Sep. 4, 1997, Appl. No. 923,695.

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.03 **22 Claims**



1. An integrated circuit memory unit comprising:

a memory array having a plurality of data storage cells;

a first sense amplifier array coupled to each of said storage cells for exchanging data signals therewith in response to a first control signal;

a second sense amplifier array coupled to each of said storage cells for exchanging signals therewith in response to said first control signal; and

a control unit coupled to said first and to said second sense amplifier array, said control unit applying said first control signal to a one of said sense amplifier arrays, said first control signal resulting in an exchange of data signals between said memory array and said one sense amplifier array, said control unit providing a second control signal to an other sense amplifier array after said first control signal has been removed, said second control signal causing said other sense amplifier array to perform a precharge operation.

5,910,927

MEMORY DEVICE AND SENSE AMPLIFIER CONTROL DEVICE

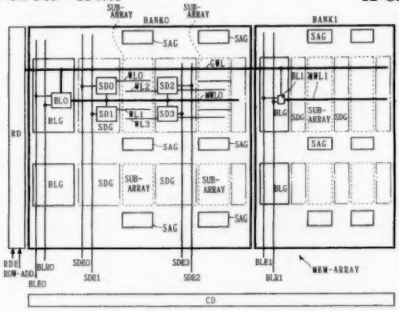
Takeshi Hamamoto, and Masaki Tsukude, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1997, Appl. No. 931,525

Claims priority, application Japan, Apr. 11, 1997, 9-93676

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.03 **12 Claims**



1. A memory device divided into a plurality of banks comprising:

a first-stage word line extending through the plurality of banks and selected in response to a row-address applied to a row decoder;

a plurality of latch circuits commonly connected to said first-stage word line and acting independently of each other;

second-stage word lines connected respectively to said plurality of latch circuits and activated independently of each other; and

third-stage word lines selectively activated by sub-decoders connected to said second-stage word lines.

5,910,928

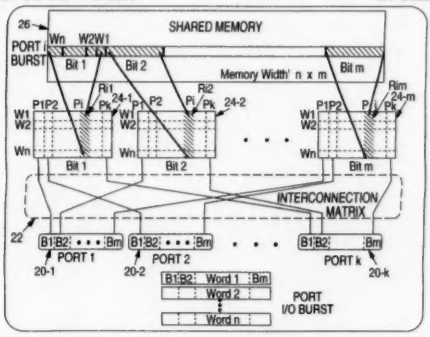
MEMORY INTERFACE UNIT, SHARED MEMORY SWITCH SYSTEM AND ASSOCIATED METHOD

Alexander Joffe, Palo Alto, Calif., assignor to MMC Networks, Inc., Santa Clara, Calif.

Continuation of application No. 08/512,613, Aug. 7, 1995, Pat. No. 5,732,041, which is a continuation-in-part of application No. 08/109,805, Aug. 19, 1993, Pat. No. 5,440,523. This application Dec. 29, 1997, Appl. No. 998,586.

Int. Cl.[6] G11C *11/401*

U.S. Cl. 365—230.05 **21 Claims**



1. For use in a multi-port memory system which includes random access memory (RAM) and multiple data ports, a memory interface comprising:

multiple buffers, each including multiple storage elements for simultaneous storage of multiple respective data burst subsets transmitted between different respective data ports and said RAM; and

an interconnect circuit which includes a multiplicity of data lines which interconnect each respective data port with multiple respective buffers such that different respective subsets of any given data burst transmitted between a respective data port and said RAM are conducted to or from different respective buffers via different respective data lines, wherein at least one data line interconnecting a port and a buffer is multiple bits wide.

5,910,929

AUDIO RAILWAY CROSSING DETECTOR

Peter R. H. McConnell, Burnaby, and Robert A. Scragg, Vancouver, both of Canada, assignors to Sonic Systems Corporation, Vancouver, Canada

Filed Jul. 10, 1998, Appl. No. 113,321

Int. Cl.[6] G01S *15/00*

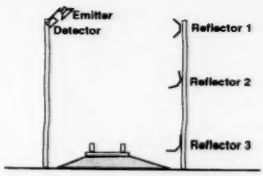
U.S. Cl. 367—96 **6 Claims**

1. An acoustic railway crossing detector, comprising:

at least one acoustic emitter;

at least one acoustic detector;

multiple reflectors arranged to reflect acoustic energy produced by said at least one emitter toward said at least one detector; and



control means coupled to the at least one acoustic detector for producing an indication of whether or not a train is present.

5,910,930

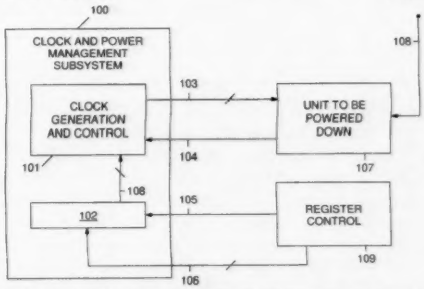
DYNAMIC CONTROL OF POWER MANAGEMENT CIRCUITRY

James N. Dieffenderfer; George Filip Diniz, both of Apex, and Thomas Andrew Sartorius, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 3, 1997, Appl. No. 868,314

Int. Cl.[6] G04F *5/00;* **G06F** *1/00*

U.S. Cl. 368—156 **7 Claims**



1. A clock and power management subsystem for controlling clock signals supplied to one or more data processing subsystems in response to a predetermined programmable control signal and an activity signal supplied by each of the one or more data processing subsystems comprising:

powered-down mode enable logic for providing a power-down control signal for defining the clock signals required by the at least one data processing subsystem when in an inactive state;

clock generation and control logic having an output for providing normal or modified clock signals to the at least one data processing subsystem, a first input for receiving the power-down control signal supplied by the powered-down mode enable logic and a second input for receiving a power-down mode activity signal supplied by the at least one data processing subsystem; and,

in response to the receipt of a power-down mode activity signal received from the at least one data processing subsystem providing clock signals specified by the input received from the powered-down mode enable logic in place of normal clock signals.

5,910,931

AUTOMOBILE INSPECTION REMINDER

Brad M. Pettyjohn, 2 Oriole Dr., Poughkeepsie, N.Y. 12601

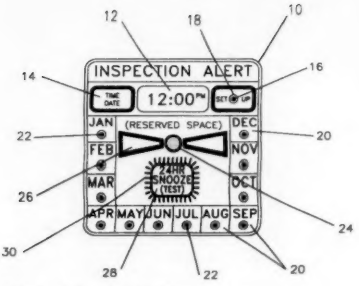
Filed Oct. 28, 1997, Appl. No. 958,963

Int. Cl.[6] G04C *21/16*

U.S. Cl. 368—251 **3 Claims**

1. An automobile annual-inspection reminder device comprising:

an instrumentality for indicating a warning that an inspection is due,



a digital clock for keeping time,

a facility for indicating to the device the date that an inspection is due,

circuitry for activating the instrumentality for indicating a warning when the digital clock reaches a date prior to that indicated by the facility,

wherein the facility includes separate apparatus for indicating every month of the year, and

wherein the device is flat and the separate apparatuses are arranged about the perimeter of the device.

5,910,932

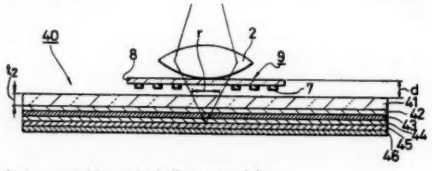
OPTICAL DISK AND OPTICAL DISK SYSTEM WITH NUMERICAL APERTURE OF OBJECTIVE LENS RELATED TO PROTECTIVE LAYER THICKNESS OF OPTICAL DISK

Tetsu Watanabe, and Yoshio Aoki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of application No. 08/613,035, Mar. 8, 1996, Pat. No. 5,757,733, which is a continuation of application No. 08/383,351, Feb. 3, 1995, Pat. No. 5,533,001, which is a division of application No. 08/277,357, Jul. 19, 1994, Pat. No. 5,392,263, which is a continuation-in-part of application No. 07/761,874, Sep. 13, 1991, abandoned. This application Sep. 12, 1997, Appl. No. 928,812.

Int. Cl.[6] **G11B** *11/00*

U.S. Cl. 369—13 **23 Claims**



1. A rewritable optical disc comprising:

a recording layer formed of a phase-change optical recording material for recording information thereon and reproducing information therefrom, onto which a laser beam is focused using an objective lens having a numerical aperture, NA, that falls within a range of $0.55 \leqq NA \leqq 1.10$, wherein the laser beam focused by the objective lens onto the recording layer is characterized by a wavelength, λ, and a minimum diameter, $2\omega_0$, given by:

$$2\omega_0 = 0.82(\lambda/NA);$$

a light-transmitting cover layer covering the recording layer and transmitting the laser beam therethrough, the light-transmitting cover layer having a thickness that falls with a range of from 0.05 mm to 0.6 mm.

5,910,933

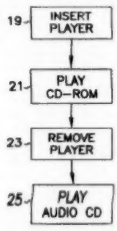
STAND ALONE OPTICAL DISC PLAYER MODULE

Robert Moore, Sioux City, Iowa, assignor to Gateway 2000, Inc, North Sioux City, S. Dak.

Filed Apr. 30, 1997, Appl. No. 846,601

Int. Cl.[6] **G11B** *17/22*

U.S. Cl. 369—33 **10 Claims**



1. An optical disc player for a computer having a front surface, comprising:

a housing having a top surface and a front surface removably insertable into the computer such that the front surface of the housing is substantially flush with the front surface of the computer when the optical disc player is inserted into the computer;

a mechanism, having a stand-alone mode and an internal mode, disposed within the housing, wherein the internal mode is for accessing data on an optical disc for utilization in conjunction with the computer and the stand-alone mode is for playing content on the optical disc for utilization apart from the computer;

a power source component disposed within the housing to provide power to the mechanism in the stand-alone mode and,

at least one control disposed within the top surface of the housing such that the at least one control are unaccessible when the optical disc player is inserted into the computer, each control operatively coupled to corresponding functions.

5,910,934

DISC REPRODUCING APPARATUS AND METHOD WITH ADJUSTMENT OF ROTATION SPEED BETWEEN READ POSITIONS

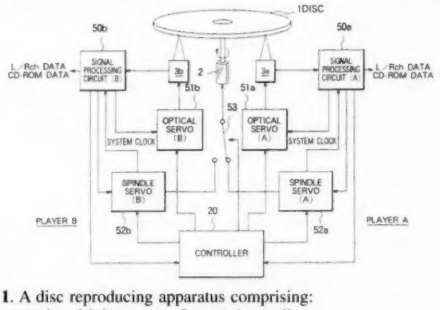
Kazutoshi Shimizume, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Jan. 23, 1997, Appl. No. 787,798

Claims priority, application Japan, Jan. 24, 1996, 8-010449

Int. Cl.[6] **G11B** *7/00*

U.S. Cl. 369—50 **7 Claims**



1. A disc reproducing apparatus comprising:

a rotation driving means for rotating a disc;

a plurality of reading means for reproducing recorded information from the disc;

a plurality of rotation servo means for detecting a speed difference between a rotational speed of said disc detected from the read signal of said reading means and a target rotational speed, generating a clock having a frequency in response to the speed difference, detecting the phase difference between

the clock and a reference clock, and outputting a command signal in response to the phase difference to said rotation driving means to control the rotational speed of the rotation driving means;

a switching means for selecting one of said plurality of reading means;

a selecting and supplying means for selecting one signal among the command signals from said plurality of rotating servo means corresponding to the selected reading means and supplying the selected command signal to said rotation driving means;

a line speed detecting means for detecting the line speed at the read position of said disc based on the read signal of said plurality of reading means; and

a control means for controlling the rotational speed of said rotation driving means before switching a read switch so that the line speed at the read position of the other of said plurality of reading means falls within a maximum reproduction line speed based on the line speed obtained from said line speed detecting means corresponding to one of said plurality of reading means when switching from one reading means to another reading means.

5,910,935

VIBRATION-RESISTANT PLAYBACK DEVICE HAVING IMPROVED SYNCHRONIZATION

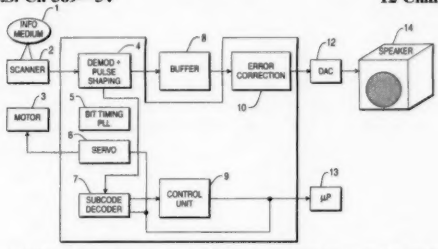
Hirohito Takagi, Villingen-Schwenningen, and Richard Rutschmann, Wutöschingen, both of Germany, assignors to Deutsche Thomson Brandt GmbH, Germany

Filed Dec. 6, 1995, Appl. No. 567,997

Claims priority, application Germany, Dec. 16, 1994, 44 45 013

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—54 **12 Claims**



1. Vibration-resistant playback device having improved synchronization, comprising:

a buffer for providing information signals from an information medium during an interruption of the reading of information stored on the information medium,

a pulse shaping and demodulating unit including a bit timing PLL for processing the information read from the information medium at a variable data rate between a first data rate and a second data rate, said first and second data rates being greater than zero, wherein the degree of filling of said buffer is maintained within predetermined limit by continuous reading of information stored on the information medium,

a subcode decoder for receiving subcode information from said demodulating unit having a data rate according to the data rate received from said demodulating unit divided by the occurrence of subcode information in said information read from the information medium,

a microprocessor connected to said subcode decoder for evaluating and validating subcode information address data, and

a control unit connected to said buffer, said subcode decoder, and said microprocessor to store an address of a write pointer of the buffer in the case of a last valid item of subcode information and to start with a synchronization byte following an interruption for synchronization of a data stream in the buffer at said variable data rate.

5,910,936

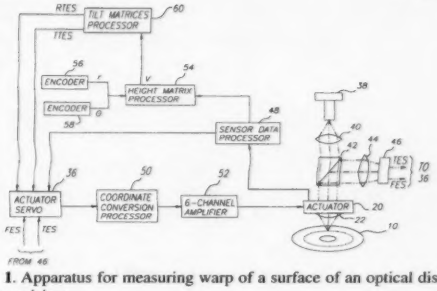
MEASURING AND COMPENSATING FOR WARP IN AN OPTICAL RECORDING DISK

Philip F. Marino, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1997, Appl. No. 852,987

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—58 **8 Claims**



1. Apparatus for measuring warp of a surface of an optical disk, comprising:

(a) an actuator including a base and a moveable lens holder, the lens holder being moveable in a vertical direction relative to the base;

(b) means for moving the actuator to selected positions relative to the surface of the disk and for measuring the vertical displacement of the disk surface relative to the actuator base at each of the selected positions;

(c) detector means for providing displacement signals corresponding to the vertical displacement of the disk surface at each of the selected positions; and

(d) computation means responsive to the displacement signals for computing a radial tilt matrix and a tangential tilt matrix of optical disk surface tilt values, the matrices representing the warp of the surface of the disk.

5,910,937

OPTICAL PICKUP APPARATUS AND IDENTIFICATION APPARATUS FOR IDENTIFYING THE TYPE OF OPTICAL RECORD MEDIUM

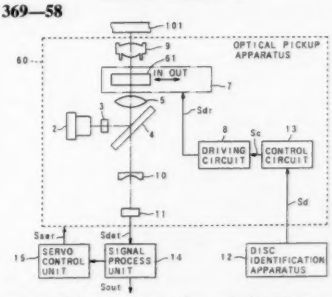
Taichi Akiba, and Akira Miura, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo-To, Japan

Division of application No. 08/595,196, Feb. 1, 1996, Pat. No. 5,757,742. This application Mar. 26, 1998, Appl. No. 48,217.

Claims priority, application Japan, Feb. 2, 1995, P7-016295; Feb. 2, 1995, P7-016297

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—58 **7 Claims**



1. An optical pickup apparatus for an information reproducing apparatus adapted to reproduce one of at least first and second type optical record media loaded on said information reproducing apparatus, said first and second type optical record media having information pits, which sizes are different from each other, and

record tracks, on which said information pits are arranged respectively, said optical pickup apparatus comprising:

light emission means for emitting a reading light;

an objective lens for focusing the emitted reading light onto the information record plane of said loaded one of said first and second type optical record media such that a light intensity distribution in a tangential direction of the record track of the focused reading light is optimum with respect to said first type optical record medium;

correction means for correcting the light intensity distribution in the tangential direction of the focused reading light with respect to said second type optical record medium due to a difference in the sizes of the information pits between said first and second type optical record media when said second type optical record medium is loaded; and

light receiving means for receiving a reflection light of the focused reading light from the information record plane of said loaded one of said first and second optical record media and for outputting a light detection signal corresponding to the received reflection light, wherein said correction means corrects the light intensity distribution by restricting a width of the focused reading light in the tangential direction so as to correct the distortion of the outputted light detection signal when said second type optical record medium is loaded.

5,910,938

LIGHT SIGNAL DETECTION CIRCUIT

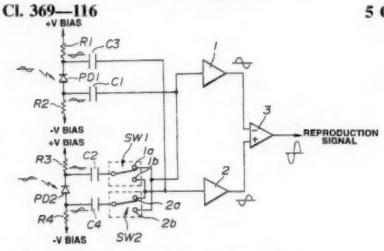
Motoi Kimura, Kanagawa, Japan, assignor to Sony Corporation, Japan

Division of application No. 09/704,721, filed as application No. PCT/JP96/00190, Jan. 31, 1996, Pat. No. 5,805,558. This application Feb. 12, 1998, Appl. No. 22,547.

Claims priority, application Japan, Jan. 31, 1995, P7-014691; Jan. 31, 1995, P7-014692

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **5 Claims**



5. A light signal detection circuit comprising:

first and second light detecting means for optically detecting a recording signal recorded on a recording medium;

first current/voltage converting means for converting a current obtained by adding an output current from the anode side of the first light detecting means and an output current from the second light detecting means into voltage;

second current/voltage converting means for converting a current obtained by adding an output signal from the cathode side of the first light detecting means and an output current from the second light detecting means into voltage;

first switching means for delivering an output signal from the cathode side of the second light detecting means to either one of the first current/voltage converting means and the second current/voltage converting means;

second switching means for delivering an output signal from the anode side of the second light detecting means to either one of the first current/voltage converting means and the second current/voltage converting means; and

differential amplifying means for carrying out differential amplification between output signals form the first and second current/voltage converting means,

wherein said first and second switching means operate such that the respective output signals from the first and second light detecting means input to the first and second current/voltage converting means are always in-phase.

5,910,939

AUTOMATIC DISC CHANGER FOR AN INFORMATION RECORDING OR REPRODUCING SYSTEM

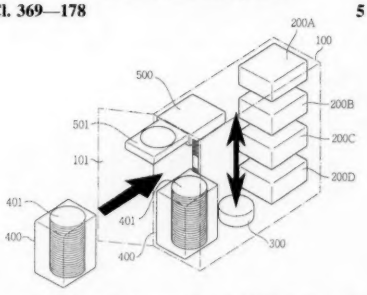
Katsuhiro Shiba; Minoru Gotoh; Masatoshi Watanabe; Yoshiyuki Kakuta, and Kenji Okuda, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 28, 1997, Appl. No. **825,371**

Claims priority, application Japan, Mar. 29, 1996, 8-077499

Int. Cl.[6] G11B 17/04;17/22

U.S. Cl. 369—178 **5 Claims**



1. An automatic disc changer for an information recording or reproducing system having at least one magazine storing a plurality of discs, and at least one drive unit for recording or reproducing information on the discs, comprising:

a disc carrier provided for carrying a disc between the magazine and the drive unit,

the disc carrier having rotating means and a chuck member having a front face and provided on the rotating means so as to be rotated about an axis, the rotating means having means for rotating the chuck member about the axis,

moving means provided for moving the disc carrier in parallel with the axis, the moving means being provided for moving the chuck member while the chuck member is rotated by the rotating means, and

sifting means for extruding and retracting the chuck member to a projected position and to a retracted position for loading the disc:

wherein the means for rotating the chuck member comprises an annular fixed member, an annular driven member rotatably provided in the annular fixed member, a drive disc member rotatably provided in the driven member, a planetary gear rotatably mounted on the drive disc member and engaged with an internal gear provided on an internal periphery of the driven member, a motor for driving the drive disc member, clutch means for securing the driven member to the fixed member and connecting the driven member to the drive disc member, the chuck member is slidably mounted on the planetary gear, whereby the chuck member is extruded and retracted from and in the disc carrier by rotation and revolution of the planetary gear.

5,910,940

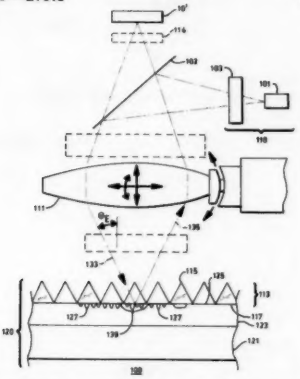
STORAGE MEDIUM HAVING A LAYER OF MICRO-OPTICAL LENSES EACH LENS GENERATING AN EVANESCENT FIELD

John M. Guerra, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application No. 08/728,262, Oct. 8, 1996, Pat. No. 5,754,514. This application Nov. 18, 1997, Appl. No. 972,778.

Int. Cl.[6] G11B *9/00*

U.S. Cl. 369—275.1 **100 Claims**



1. A storage medium, suitable for use with an external source of illumination for the storage and retrieval of information, said storage medium comprising:

an optical layer disposed to receive the illumination, said optical layer comprising a plurality of micro-optical elements, each said micro-optical element having a first index of refraction and configured such that illumination incident upon said micro-optic element produces local evanescent field illumination extending from said optical layer, and

an active layer disposed to receive said evanescent field illumination, said active layer being responsive to said evanescent field illumination such that a predetermined amount of said evanescent field illumination impinging upon a portion of said active layer produces an artifact within said portion.

5,910,941

DISC CARTRIDGE LID STRUCTURE

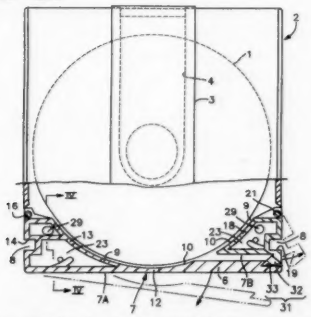
Hikaru Mizutani, Mino, Japan, assignor to Hitachi Maxell, Ltd., Osaka-fu, Japan

Filed Feb. 26, 1997, Appl. No. 806,321

Claims priority, application Japan, Feb. 26, 1996, 8-065492

Int. Cl.[6] G11B *23/02;23/03*

U.S. Cl. 369—291 **6 Claims**



1. A disc cartridge for freely rotatably accommodating a disc-shaped recording medium, which comprises:

a cartridge casing having a disc chamber defined therein for freely rotatably accommodating the recording medium and also having front and rear ends opposite to each other and left and right sides opposite to each other and top and bottom panels opposite to each other, said cartridge casing having left and right recesses defined in respective portions of the left and right sides of the cartridge casing adjacent the rear end thereof, said cartridge casing further having a generally U-shaped access opening defined in the rear end thereof and respective portions of the left and right sides thereof including the associated recesses; and

a lid assembly pivotally supported by the cartridge casing for selectively opening and closing the access opening and including a lid body adapted to protrude into the cartridge casing so as to occupy a space between the recording medium within the cartridge casing and the access opening;

said lid body including a regulating surface for restricting a play of the recording medium within the cartridge casing and left and right cutouts defined therein in a manner alignable with the left and right recesses, respectively; and

a thin-walled cavity for reducing the volume and weight of the lid assembly being formed so as to occupy a major portion of surface walls of the lid body while opening upwardly and downwardly at inner surface walls of the top and bottom panels, respectively, wherein the top and/or bottom panel is formed with at least one positioning hole which is aligned with the thin-walled cavity of the lid assembly when the lid assembly is in a closed position.

5,910,942

DEVICE TO REGULATE THE FLOW OF ATM CELLS WITHIN AN ATM PACKET SWITCH

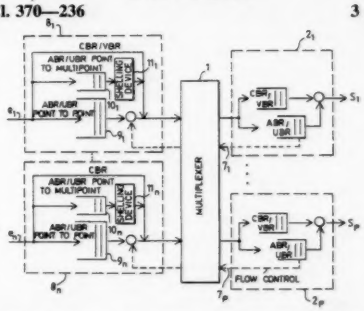
Thierry Grenot, Clamart; Colette Vivant, St Germain en Laye, and Patrick Letourneur, Montigny le Bretonneux, all of France, assignors to Thomson-CSF, Paris, France

Filed Oct. 9, 1996, Appl. No. 728,500

Claims priority, application France, Oct. 24, 1995, 95 12492

Int. Cl.[6] H04J *3/08*

U.S. Cl. 370—236 **3 Claims**



1. A regulating device to regulate the flow of ATM cells within an ATM packet switch including a multiplexer associated with a specified number of input and output buffers and a control device to control the internal flows of ATM cells informing the input buffers of the state of congestion of the output buffers, said regulating device comprising means to convert the flow of sporadic point-to-multipoint cells, arriving at the input of the input buffers, into a regular flow of point-to-multipoint cells towards the multiplexer irrespective of the outgoing direction taken by the cells and independently for each input.

5,910,943

METHOD AND DEVICE IN RADIO BASED TELECOMMUNICATION SYSTEM USING REPEATERS

Johan Wickman, Bjarred, Sweden, assignor to Telia AB, Farsta, Sweden

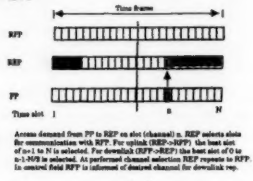
PCT No. PCT/SE95/00849, § 371 Date Apr. 1, 1997, § 102(e) Date Apr. 1, 1997, PCT Pub. No. WO96/07250, PCT Pub. Date Mar. 7, 1996

PCT Filed Jul. 12, 1995, Appl. No. 776,599

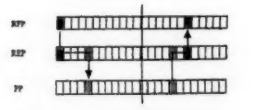
Claims priority, application Sweden, Aug. 19, 1994, 9402769

Int. Cl.[6] H04B *7/14*

U.S. Cl. 370—279 **12 Claims**



Access demand from FP to REP on slot (channel) n. REP selects slots for communication with RFP. For uplink (REP->RFP) the best slot of n+1 to N is selected. For downlink (RFP->REP) the best slot of 0 to n-1-N/2 is selected. At performed channel selection REP repeats to RFP. In control field RFP is informed of desired channel for downlink rep.



RFP transmits on approved channel to REP, which after that repeats to FP on the channel indicated by FP at above mentioned access demand. After that the now established duplex communication proceeds

1. A method in a radio based telecommunication system, using at least one stationary unit, at least one portable unit and at least one repeater in a communication between said units, wherein at an establishing of a duplex channel between said portable unit and said stationary unit an access demand is sent from said portable unit to said repeater on a time slot n, wherein said repeater selects a best time slot among time slots n+1 to N for an uplink communication with said stationary unit, where N represents a number of time slots n in a frame transmitted in said communication between said units, and wherein uplink communication between said portable unit and said stationary unit is established and said repeater repeats transmission information to the stationary unit, and that in a downlink communication, a best time slot among time slots 1 to n−1−N/2 is selected for communication between the stationary unit and the portable unit, wherein said stationary unit transmits on said best slot to said repeater, which repeats transmission information from said stationary unit to the portable unit on said time slot indicated by the portable unit at said access demand,

wherein $n+1 \leqq N$, and $n \geqq 1+N/2$.

5,910,944

RADIO TELEPHONE AND METHOD FOR OPERATING A RADIOTELEPHONE IN SLOTTED PAGING MODE

Mark J. Callicotte, Oak Park, and Brian D. Storm, Round Lake Beach, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1997, Appl. No. 808,555

Int. Cl.[6] H04J *13/04*

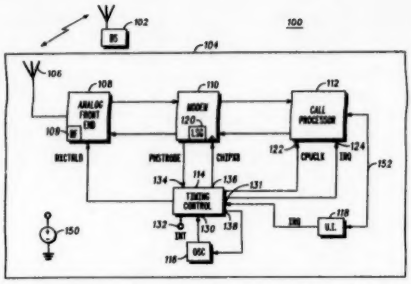
U.S. Cl. 370—311 **17 Claims**

1. A method for operating a Code Division Multiple Access (CDMA) radiotelephone in a slotted paging mode, the CDMA radiotelephone operable in a CDMA radiotelephone system, the method comprising the steps of:

(a) determining a wakeup time;

(b) synchronizing a sleep clock signal to a received pseudorandom noise (PN) rollover boundary, thereby synchronizing the sleep clock signal with a system time of the radiotelephone system, and storing the system time and a future linear sequence generator (LSG) state;

(c) entering a sleep mode, interrupting communication;



(d) in the sleep mode, simulating system timing until end of the wakeup time; and

(e) resuming communication using the future LSG state.

5,910,945

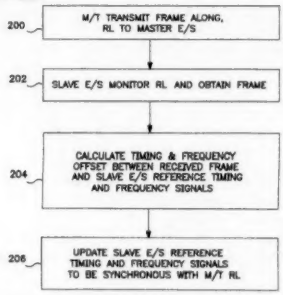
METHOD AND APPARATUS FOR SYNCHRONIZING COMMUNICATIONS IN A SATELLITE BASED TELECOMMUNICATIONS SYSTEM

Arthur L. Garrison, Redondo Beach; Terrence R. Smigla, and Scott A. Stephens, both of Manhattan Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Apr. 30, 1996, Appl. No. 643,120

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—324 **24 Claims**


200
M/T TRANSMIT FRAME ALONG, RL TO MASTER E/S
202
SLAVE E/S MONITOR RL AND OBTAIN FRAME
204
CALCULATE TIMING & FREQUENCY OFFSET BETWEEN RECEIVED FRAME AND SLAVE E/S REFERENCE TIMING AND FREQUENCY SIGNALS
206
UPDATE SLAVE E/S REFERENCE TIMING AND FREQUENCY SIGNALS TO BE SYNCHRONOUS WITH M/T RL

1. A method for maintaining synchronous communications in a satellite based telecommunication system between a user terminal and at least two earth stations, the method comprising the steps of:

assigning one earth station as a master earth station and one earth station as a slave earth station;

transmitting from a user terminal a communications frame along a return link to the master earth station, said frame including a synchronization signal;

monitoring said return link at the slave earth station to obtain said frame;

calculating a synchronization offset between said synchronization signal received in said frame and a reference synchronization signal of the slave earth station; and

updating said reference synchronization signal of the slave earth station based on said synchronization offset to synchronize the slave earth station with the master earth station.

5,910,946

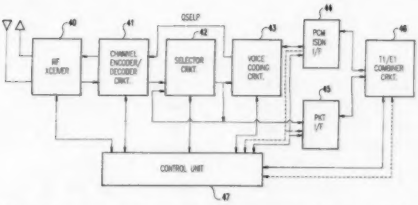
WIRELESS INTERNET NETWORK ARCHITECTURE FOR VOICE AND DATA COMMUNICATIONS

John S. Csapo, Dallas, Tex., assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 13, 1997, Appl. No. 782,966

***Int. Cl.*[6] H04Q** *7/30*

U.S. Cl. 370—328 **15 Claims**



12. A base station for use in a communications network, the communications network including both the public switched telephony network and the internet network, said base station comprising:

a subscriber interface which receives and transmits subscriber signals;

a PCM interface which receives and transmits pulse code modulation data;

a packet data interface which receives and transmits packet data;

an encoder which encodes the subscriber signals to obtain a subscriber encoded signal;

a PCM coder which is operatively coupled to said PCM interface and which converts the subscriber encoded signal to the pulse code modulation data; and

a selector circuit which receives the subscriber encoded signal and selectively applies the subscriber encoded signal to either one of said PCM coder and said packet data interface.

5,910,947

MOBILE UNIT RADIO COMMUNICATIONS SYSTEM

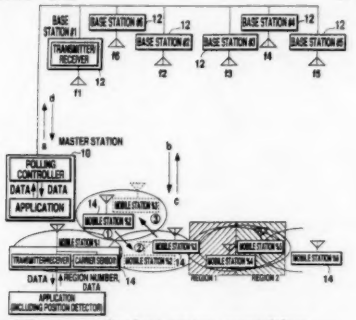
Yoshisumi Futamura, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 11, 1996, Appl. No. 712,378

Claims priority, application Japan, Sep. 12, 1995, 7-234134

***Int. Cl.*[6] H04B** *7/26*

U.S. Cl. 370—332 **17 Claims**



1. A mobile communications system, comprising:

a master station and a plurality of mobile stations, the master station and the mobile stations being configured to exchange communications in a polling system through a plurality of base stations and the mobile stations being further configured to execute movements based on instructions contained in communications from the master station, wherein

each base station is configured to transmit radio waves,

each mobile station is further configured to detect a result indicating a receiving state relative to the radio waves received from the base stations and to transmit the detected result to the master station via at least one of the base stations presently providing the exchange of communications, and

the master station is further configured to determine at least one of the base stations to next provide the exchange of communications based on the detected result transmitted from each mobile station.

5,910,948

ACQUISITION SCHEME AND RECEIVER FOR AN ASYNCHRONOUS DS-CDMA CELLULAR COMMUNICATION SYSTEM

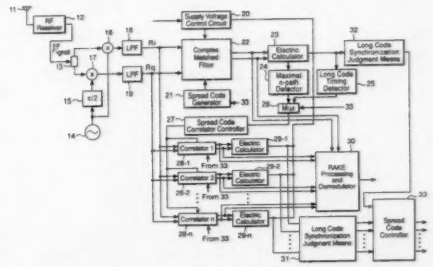
Guoliang Shou; Changming Zhou; Xuping Zhou; Makoto Yamamoto; Sunao Takatori, all of Tokyo; Mamoru Sawahashi, and Fumiyuki Adachi, both of Yokohama, all of Japan, assignors to NTT Mobile Communications Network, Inc., and YOZAN Inc., both of Tokyo, Japan

Filed Oct. 22, 1997, Appl. No. 955,613

Claims priority, application Japan, Oct. 23, 1996, 8-297859

***Int. Cl.*[6] H04B** *7/216*

U.S. Cl. 370—335 **7 Claims**



2. A receiver for an asynchronous DS-CDMA cellular communication system using spread code sequences having a long code peculiar to each cell and a short code corresponding to each communication channel, and employing a specified short code common to each cell in the receiver's control channel, comprising:

i) a matched filter for detecting a correlation between a received signal and a spread code sequence;

ii) a plurality of correlators parallelly set for detecting a correlation between said received signal and spread code sequence;

iii) a long code timing detector for detecting the maximal correlated output of said matched filter;

iv) a long code synchronization judging means for receiving said correlated output from said matched filter;

v) a long code synchronization judging means for receiving said correlated output from said plurality of correlators;

vi) a correlator controller for receiving an output of said long code timing detector and for controlling the action of said plurality of correlators; and

vii) a spread code controller for receiving an output from said long code synchronization judging means, and for outputting control signals to select a spread code sequence used for correlating action in said matched filter and said plurality of correlators.

5,910,949

PACKET CHANNEL FEEDBACK

Lars Bilström, Solna, Sweden, and John Diachina, Garner, N.C., assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 18, 1995, Appl. No. 544,836

***Int. Cl.*[6] H04J** *3/17*

U.S. Cl. 370—337 **12 Claims**

1. A method for transmitting packet data information over a packet data channel in a communication system, comprising the steps of:

providing a packet data channel over which a plurality of terminals can transmit said packet data information in an interleaved manner, said packet data information being addressed so that packets transmitted by different terminals can be routed to different destinations;

granting access of the packet data channel to a first communication device based on packet channel feedback information broadcast by said system, such that the first communication device transmits first packet data information on the packet data channel;

broadcasting, from said system, said packet channel feedback information associated with an interrupt status of said packet data channel;

interrupting the first packet data transmission from the first communication device for an interruption period in response to said broadcast interrupt status; and

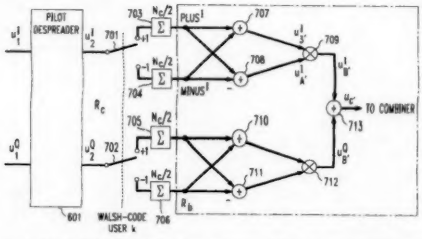
granting access of the packet data channel to a second communication device, wherein the second transmits second packet data information during the interruption period.

5,910,950

DEMODULATOR PHASE CORRECTION FOR CODE DIVISION MULTIPLE ACCESS RECEIVER

Stephan ten Brink, Holmdel Township, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 16, 1996, Appl. No. 699,008
Int. Cl.[6] H04J *13/00*
U.S. Cl. 370—342 **10 Claims**



1. A Code Division Multiple Access, CDMA, receiver comprising

means for receiving a coherent CDMA signal including k, where k<or=1, encoded data channels and at least one pilot channel, the k data channels being encoded using mutually orthogonal codes, and

a demodulator for decoding a desired one of the k data channels and one of the at least one pilot channels, the demodulator including

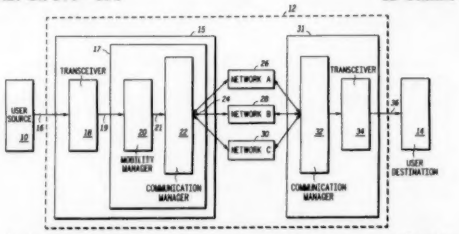
a switch for switching the desired data channel and the pilot channel to a plurality of accumulator circuits for demodulating the desired data channel the switch being controlled by an orthogonal code of the desired data channel during accumulation.

5,910,951

TRANSMITTING DEVICE WITH MOBILITY MANAGER AND METHOD OF COMMUNICATING

Michael David Pearce, Barrington; Rodd Bryan Zurcher, Schaumburg, and Lewis B. Oberlander, Buffalo Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 15, 1996, Appl. No. 720,984
Int. Cl.[6] H04L *12/28*
U.S. Cl. 370—351 **12 Claims**



1. A transmitting device for communication over a multiplicity of networks comprising:

a mobility manager, having a database that stores a net table of potential networks which the transmitting device is capable of connecting with, for generating a prioritized list of qualifying networks with varying priorities over which a data object may be transmitted to a receiving device; and

a communication manager, coupled to the mobility manager, for determining a highest-priority qualifying network that is deemed available from the prioritized list of qualifying networks over which to transmit the data object from the transmitting device to the receiving device, wherein a lower-priority qualifying network from the prioritized list of qualifying networks is only used to transmit the data object if all higher-priority qualifying networks have been deemed unavailable.

5,910,952

CALL RESTRICTION SYSTEM FOR AN ATM EXCHANGE

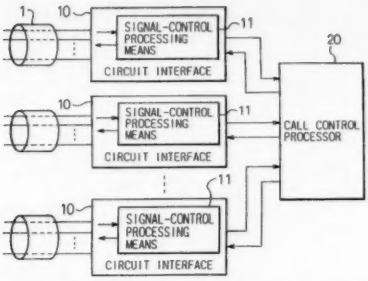
Keiji Mizuma, and Izumi Kobayashi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 22, 1996, Appl. No. 701,490
Claims priority, application Japan, Aug. 22, 1995, 7-213122
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—395 **8 Claims**

1. In an ATM exchange which has at least one circuit interface section to which are connected a plurality of physical circuits, and which terminates said physical circuits, and a call control processor which is connected to the circuit interface section or sections and which performs call-processing control, a call restriction system in said circuit interface section comprising:

means for signal-control processing which performs call restriction either by an instruction from said call control processor or independently, and wherein

said call control processor determines by means of a prescribed algorithm, whether or not call restriction is to be performed with respect to a physical circuit which contains a virtual circuit originating a message, and



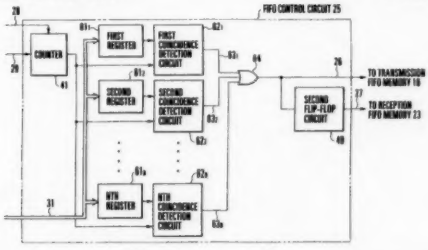
said signal-control processing means independently perform call restriction for a predetermined time with respect to said physical circuit after receiving a call restriction request in accordance with said determination by said call control processor.

5,910,953

ATM INTERFACE APPARATUS FOR TIME-DIVISION MULTIPLEX HIGHWAYS

Hisashi Inata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 11, 1996, Appl. No. 731,275
Claims priority, application Japan, Oct. 13, 1995, 7-265338
Int. Cl.[6] H04J *3/00*
U.S. Cl. 370—395 **6 Claims**



1. An ATM interface apparatus for a time-division multiplex highway, comprising:

holding means for holding allocation information of a time slot used to transmit a cell as a transmission unit in asynchronous transfer mode (ATM) communication through a time-division multiplex highway;

detection means for detecting a timing and number of each time slot of the time-division multiplex highway;

a cell buffer for storing cells transmitted through an ATM communication line and exchanging the cells between the ATM communication line and the time-division multiplex highway;

determination means for determining, on the basis of the time slot number detected by said detection means and the allocation information held in said holding means, whether a time slot is used for transmission of a cell; and

control means for, when a determination result obtained by said determination means indicates that the time slot is used for transmission of the cell, controlling transfer of the cell between the ATM communication line and the time-division multiplex highway by designating cell read/write access to said cell buffer,

wherein said holding means holds start and end time slot numbers designating an allocation range of time slots to be consecutively used to transmit cells, said determination means determines whether a time slot number detected by said detection means falls within the allocation range held by said holding means, and said control means designates cell read/write access to said cell buffer if the time slot number falls within the allocation range, and

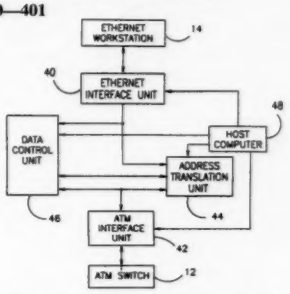
wherein said detection means comprises a counter which is reset by a frame sync signal and counts time slots, said holding means comprises first and second registers for respectively holding start and end time slot numbers, said determination means comprises first and second coincidence detection circuits for detecting coincidence between a count value of said counter and contents of said first and second registers, and said control means comprises a flip-flop circuit which is set by a coincidence output from said first coincidence detection circuit, and reset by a coincidence output from said second coincidence detection circuit, said flip-flop circuit outputting a set output as a gate signal to said cell buffer.

5,910,954

NETWORK SWITCH

Zvi Bronstein, Tel Aviv; Eytan Mann, Modin, and Eldad Bar-Eli, Ramat HaSharon, all of Israel, assignors to 3Com Corporation, Santa Clara, Calif.

Continuation of application No. 08/502,146, Jul. 13, 1995, abandoned. This application Aug. 13, 1997, Appl. No. 910,783.
Claims priority, application Israel, Aug. 1, 1994, 110537
Int. Cl.[6] H04L *12/66*
U.S. Cl. 370—401 **8 Claims**



1. A network having at least one emulated local area network (LAN) therein, said network comprising:

at least two groups of legacy LAN workstations;

at least two network switches, each connectable to one of said groups of said legacy LAN workstations;

an ATM switch connectable to said at least two network switches;

wherein each network switch comprises:

a cell memory for storing cells of data;

a cell memory manager for converting data back and forth between a frame and a cell format, for storing said cell format data in said cell memory and for retrieving cells therefrom;

means for local switching of said cells of data among said group of legacy LAN workstations connectable to said network switch; and

means for remote switching of said cells of data from said network switch to a remote network switch via said ATM switch.

5,910,955

SWITCHING HUB CAPABLE OF CONTROLLING COMMUNICATION QUALITY IN LAN

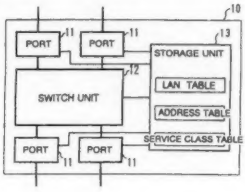
Takashi Nishimura; Naohide Sekiya; Takeshi Kimura; Hideki Inoue; Hiroshi Nagano, and Ikuo Taoka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 25, 1997, Appl. No. 921,872

Claims priority, application Japan, Mar. 18, 1997, 9-065028

Int. Cl.[6] H04L *12/46*

U.S. Cl. 370—401 **15 Claims**



1. A switching hub used in combination with a terminal for transmitting./receiving a frame having a type information field into which type information indicative of a type of data is set, comprising:

a plurality of input/output ports;

a switch unit connected to said plurality of input/output ports, for switching a frame supplied from each of said input/output ports based upon information contained in this frame; and

a service class table for storing thereinto a correspondence relationship between the type information and the service class; wherein:

each of said plural input/output ports includes:

a buffer memory for storing the frame;

a management information memory for storing thereinto a plurality of combined information constituted by storage region information indicative of a region of said buffer memory and by the service class in such a format by which a relative sequence of storing the respective combined information can be recognized, said storage region information being used to store the frame;

a receiving unit for receiving the frame;

a storage control unit by which when said receiving unit receives the frame, a region of said buffer memory capable of storing said frame is specified based upon the storage region information stored in said management information memory to thereby store said frame into the specified region; and combined information constructed of storage region information indicative of the specified region and a service class related to type information set into a type information of said frame in said service class table is added to said management information memory in such a format by which it can be recognized that said combined information has been stored after the combined information previously stored in said management information memory; and

a read-out control unit by which when the read-out control unit is selected by said switch unit, combined information related to a service class capable of statisfying a predetermined condition and furthermore lastly stored is specified from the combined information stored in said management information memory; a frame stored in a region of said buffer memory designated by storage region information contained in said specified combined information is supplied to said switch unit; and the specified combined information stored in said management information memory is deleted.

5,910,956

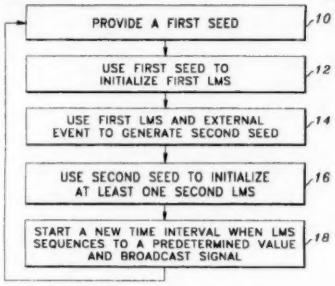
RANDOM TIME INTERVAL GENERATOR

Warren E. Guthrie, Glen Ellyn, and Michael J. Trainor, Palatine, both of Ill., assignors to Northrop Gruman Corporation, Los Angeles, Calif.

Filed Nov. 5, 1996, Appl. No. 743,943

Int. Cl.[6] H04L *2/413*

U.S. Cl. 370—445 **14 Claims**


PROVIDE A FIRST SEED
10
USE FIRST SEED TO INITIALIZE FIRST LMS
12
USE FIRST LMS AND EXTERNAL EVENT TO GENERATE SECOND SEED
14
USE SECOND SEED TO INITIALIZE AT LEAST ONE SECOND LMS
16
START A NEW TIME INTERVAL WHEN LMS SEQUENCES TO A PREDETERMINED VALUE AND BROADCAST SIGNAL
18

1. A method for generating a random time interval, the method comprising the steps of:

a) providing a first seed;

b) initializing a first linear maximal sequence with the first seed;

c) generating a second seed via cooperation of the first linear maximal sequence and an external signal;

d) initializing at least one second linear maximal sequence with the second seed;

e) starting a new time interval when the second linear maximal sequence sequences to a predetermined value; and

f) repeating steps a–e, as desired.

5,910,957

TEST DEVICE AND ITS METHOD FOR TESTING DSP ICS IN THE FINISHED PRODUCT STATE IN A DIGITAL VIDEO APPARATUS

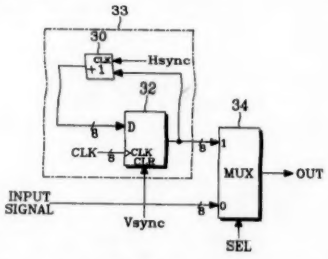
Byoung-Jin Kim, Suwon, Rep. of Korea, assignor to Samsung Eectronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed May 30, 1997, Appl. No. 866,316

Claims priority, application Rep. of Korea, Oct. 31, 1996, 51157/1996

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—21.1 **11 Claims**



1. A test device for individually testing one or more digital signal processor integrated circuits which each include a test signal generator, said integrated circuits being integrated with one or more additional integrated circuits in a product state in a digital video apparatus, the test device comprising:

a plurality of said digital signal processor integrated circuits, each responsive to a mode selection signal for digitally processing a signal from said test signal generator and outputting the digitally processed signal when a respective one of said plurality of integrated circuits is selected by the mode selection signal;

a monitor for monitoring an output from the selected DSP IC being tested.

5,910,958

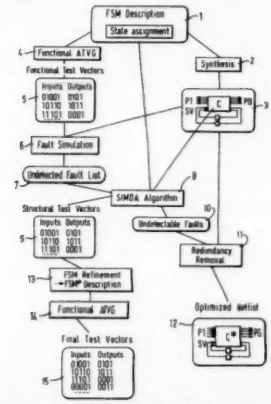
AUTOMATIC GENERATION OF TEST VECTORS FOR SEQUENTIAL CIRCUITS

Christian Y. Jay, Valbonne, and Franck J. Poirot, Antibes, both of France, assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of application No. 08/265,702, Jun. 24, 1994, abandoned, which is a continuation of application No. 07/745,038, Aug. 14, 1991, abandoned. This application Oct. 6, 1995, Appl. No. 539,887.

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—27.1 **9 Claims**



1. A method of automatically generating test vectors for testing a sequential circuit, said sequential circuit implementing a finite state machine which comprises a combinatorial part and sequential elements, said method comprising the steps of:

providing a functional specification of the sequential circuit, said functional specification defining said finite state machine;

generating automatically a first set of test vectors from said functional specification, said first set of vectors enabling testing of less than all possible faults in said circuit;

synthesizing automatically the functional specification of the sequential circuit; and

applying automatically to said combinatorial part a structural algorithm to generate a second set of test vectors, the test vectors in said second set of test vectors enabling testing of at least a portion of the faults which can occur in said circuit and which are not testable by test vectors in said first set of test vectors.

5,910,959

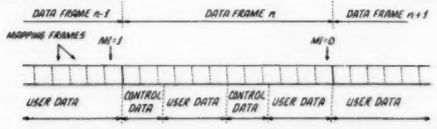
CONTROL CHANNEL FOR MODEMS

Sverrir Olafsson, Seltjarnarnes, Iceland, and Sandeep Rajpal, Irvine, Calif., assignors to Conexant Systems, Inc., Newport Beach, Calif.

Filed Jan. 6, 1997, Appl. No. 779,084

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—37.1 **17 Claims**



1. A method of transmitting control information between a first modem and a second modem operating in accordance with a predetermined ITU V-series modem recommendation without substantially affecting the predetermined modem recommendation in operation, comprising the steps of:

providing said first modem and said second modem in communication in accordance with the predetermined modem recommendation at a first data rate R1;

transmitting a data frame from said first modem to said second modem, said data frame comprising a plurality of mapping frames, wherein one of said mapping frames contains a mode indicator (MI) encoded in accordance with an encoding scheme;

decoding said MI by said second modem in accordance with said encoding scheme;

proceeding with communication in accordance with said predetermined modem recommendation at a second data rate R2 when said MI indicates control data; and

receiving control information at said second data rate R2 at said second modem.

5,910,960

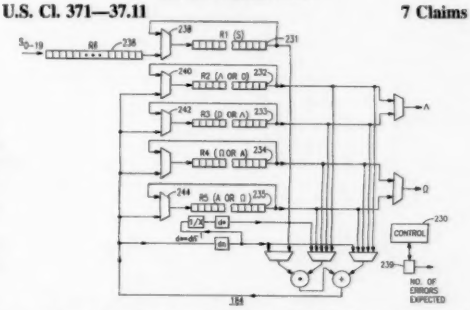
SIGNAL PROCESSING APPARATUS AND METHOD

Anthony Peter J. Claydon, Bath; Charles D. MacFarlane, Dursley; Richard J. Gammack; Anthony Mark Jones, both of Bristol; William P. Robbins, Cam, and Mark Barnes, Chippenham, all of United Kingdom, assignors to Discovision Associates, Irvine, Calif.

Division of application No. 08/481,107, Jun. 7, 1995, Pat. No. 5,668,831. This application Jun. 7, 1995, Appl. No. 480,721.

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—37.11 **7 Claims**



1. A Reed-Solomon decoding circuit for decoding a packet of information R(x), the packet being an assembled packet C(x) having an injected error E(x), the assembled packet C(x) being of the type having a plurality of information bytes and at least one parity byte, the circuit comprising:

a FIFO buffer that accepts a packet of data R(x) for storage therein, said stored data comprising at least a plurality of *information bytes;*

means for calculating syndromes of said packet of data R(x) according to an equation

$$S_j = \sum_{i=0}^{n-1} rx_i \alpha^{(i \cdot j + m_0)}$$

wherein

S_j is the jth syndrome,

n is the number of bytes in said packet R(x),

m_0 is an arbitrary integer,

rx_i is the ith byte in a packet,

α^x is the xth α in a Galois Field;

a first circuit coupled to said means for calculating syndromes for performing a Berlekamp algorithm to generate a first signal representative of a locator polynomial $\Lambda(x)$ and second signal representative of an evaluator polynomial $\Omega(x)$, said first circuit comprising:

a first register for holding a portion of a locator polynomial Λ(x) in a first iteration of said Berlekamp algorithm;

a second register for holding a portion of a D polynomial in said first iteration of said Berlekamp algorithm; and

a first switch means for interchanging an address of said first register with an address of said second register to access a required portion of said D polynomial and of said locator polynomial Λ(x) from said first register and said second register respectively in a second iteration of said Berlekamp algorithm;

a second circuit coupled to said first signal and said second signal of said first circuit for performing a Chien search on said locator polynomial Λ(x), and for determining a magnitude of error at a location in said packet R(x) according to the equation

$$E(x) = \frac{\Omega(\alpha^{-i})}{\Lambda'(\alpha^{-i})}\alpha^{i};$$

and

an adder coupled to an output of said FIFO buffer and to an output of said second circuit.

5,910,961

METHOD AND APPARATUS FOR TRACKWISE BURST ERROR CORRECTION IN A MULTITRACK STORAGE FORMAT

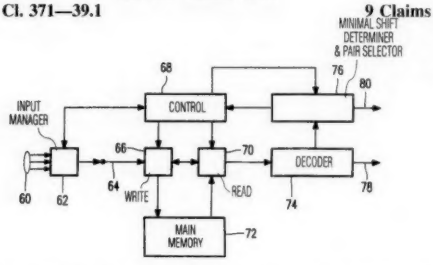
Ludovicus M.G.M. Tolhuizen, and Constant P.M.J. Baggen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 12, 1997, Appl. No. 873,375

Claims priority, application European Pat. Off., Jun. 13, 1996, 96201646

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—39.1 **9 Claims**



9. An apparatus for trackwise burst error correction in multitrack storage based on an error protective code format that comprises first and second linear block codes each based on a plurality of symbols, and wherein of each word pair that consists of one word from either code, which words have a pivot symbol in common and have mutually different cross-track orientations, so that each individual symbol forms the pivot symbol of one such word pair, comprising:

decoding means for decoding an error-decodable word pair with a first pivot symbol; and

selection means for defining a next word pair with a second pivot symbol at a minimal shift with respect to the pivot symbol of the most recently decoded word pair, and for then generating an activation signal for the decoding means to undertake decoding of the next word pair, wherein said minimal shift is non-uniform as based on the most recent decoding;

and wherein said decoding means have an output for subsequent to said decoding generating an activation signal for the selection means.

5,910,962

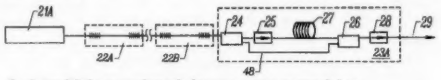
MULTIWAVELENGTH FIBER LASER SOURCES FOR FIBEROPTIC NETWORKS

Jing-Jong Pan, Milpitas, and Yuan Shi, San Jose, both of Calif., assignors to E-TEK Dynamics, Inc., San Jose, Calif.

Filed Aug. 29, 1997, Appl. No. 920,375

Int. Cl.[6] H01S *3/07*

U.S. Cl. 372—6 **29 Claims**



1. A multiple wavelength laser source comprising

a first pumping laser generating output light;

a plurality of fiber lasers, each fiber laser having fiber Bragg gratings and an output centered at a selected wavelength, said plurality of fiber lasers connected to said first pumping laser such that said output light from said first pumping laser provides lasing energy for each of said fiber lasers, said plurality of fiber lasers connected serially, one of said fiber lasers having an end connected to said first pumping laser and another of said fiber lasers having an end connected to a first output fiber; and

an optical fiber amplifier having a first end, a second end, an erbium-doped optical fiber section therebetween and no fiber Bragg gratings, said first end of said optical fiber amplifier connected to said first output fiber and said second end of said optical fiber amplifier connected to a second output fiber.

5,910,963

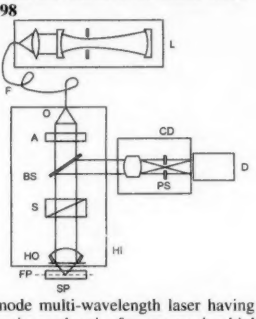
LASER RESONATOR DESIGN WITH IMPROVED SIGNAL-TO-NOISE LEVEL (S/N) AT THE OUTPUT OF A SINGLE-MODE FIBER-COUPLED MULTI-WAVELENGTH LASER PROVIDING ILLUMINATION FOR A LASER SCANNING MICROSCOPE

Ulrich Simon, Jena, Germany, assignor to Carl Zeiss Jena GmbH, Jena, Germany

Filed Apr. 8, 1997, Appl. No. 838,313

Int. Cl.[6] H01S *3/08;* **G02B** *21/00*

U.S. Cl. 372—98 **14 Claims**



1. A single-mode multi-wavelength laser having a laser cavity and a resonator mirror wherein, for suppressing higher order transverse modes of the laser cavity than TEM_{oo} of at least one laser emission wavelength, said laser comprising:

at least one arrangement selected from the group consisting of:

a) at least one resonator mirror movable along the resonator axis in order to vary the resonator length;

b) at least one resonator mirror tiltable until a surface normal thereof encloses an angle (0≠0) with the resonator axis;

c) at least one resonator mirror being replaced by a concave mirror with different curvature radius;

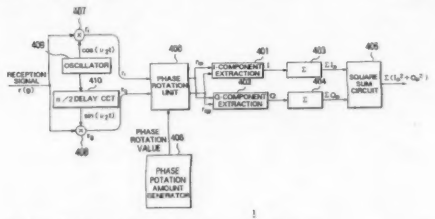
d) at least one resonator mirror being replaced by a flat mirror; and

e) at least one mirror holder allowing the interchangeable use of several mirrors with different curvature radii; and a variable intracavity aperture.

5,910,964
CODE DETECTION APPARATUS

Takehiro Sugita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 9, 1996, Appl. No. 598,943
Claims priority, application Japan, Feb. 10, 1995, 7-022912
Int. Cl.[6] H04B *7/26*
U.S. Cl. 375—200 **8 Claims**



1. A code detection apparatus comprising:

detection means for orthogonally detecting a spread spectrum modulated reception signal and producing respective orthogonal components;

a phase rotation amount generator for generating a phase rotation amount signal representing a desired frequency compensation;

a phase rotation unit receiving said orthogonal components from said detection means and said phase rotation amount signal for rotating a respective phase of said orthogonal components to generate rotated phase orthogonal components r_{ip}, r_{qp};

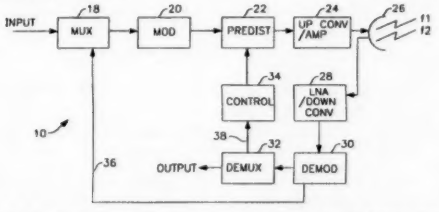
an I-component extraction circuit and a Q-component extraction circuit each receiving said rotated phase orthogonal components for respectively generating two orthogonal signals (I, Q); and

cumulative square summation means receiving said two orthogonal signals and for cumulatively adding each of said orthogonal signals (I, Q) a predetermined number of times, and calculating square sums $(\Sigma I)^2+(\Sigma Q)^2$ of said cumulatively added orthogonal signals (I, Q) to produce a square sum signal for use in detecting a code of said spread spectrum modulated reception signal based on said calculated square sums $(\Sigma I)^2+(\Sigma Q)^2$ obtained by changing the amount of the phase rotation.

5,910,965
ADAPTIVE PREDISTORTION USING OVER-THE-HOP FEEDBACK

Nick Ierfino, Montreal, and Larry Zakaib, Quebec, both of Canada, assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 30, 1995, Appl. No. 496,966
Int. Cl.[6] H04B *1/62*
U.S. Cl. 375—220 **21 Claims**



1. An improved method of predistorting a signal before transmission of the signal to compensate for nonlinearities introduced when the signal is transmitted to a receiver, the improvement comprising the steps of:

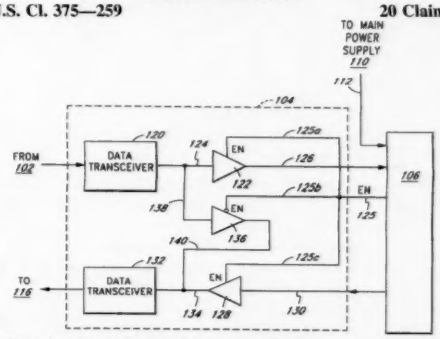
(a) evaluating a received signal at a receiver to determine whether the received signal includes nonlinearities, said evaluation including the step of identifying a nonrandom distribution of data in the received signal, the nonrandom distribution being indicative of a nonlinearity; and

(b) providing a result of the evaluation back to a transmitter that sent the received signal, the result being used at the transmitter to predistort signals before transmission therefrom.

5,910,966
APPARATUS AND METHOD FOR MAINTAINING DATA TRANSFER

Kazutoyo Sekine, Irvine, and Dan Lotocky, Fullerton, both of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Trans Com Inc., Irvine, Calif.

Filed Jan. 28, 1997, Appl. No. 787,701
Int. Cl.[6] H04L *27/00*
U.S. Cl. 375—259 **20 Claims**



1. A signal transferring circuit, comprising:

a first terminal for receiving a data signal;

a second terminal for transmitting the data signal;

a first buffer having an input terminal and an output terminal, the input terminal being coupled to the first terminal, the first buffer being enabled to transfer the data signal from the first terminal to a predetermined destination under a first condition;

a second buffer having an input terminal that is coupled to the predetermined destination and an output terminal that is coupled to the second terminal, the second buffer being enabled for transferring the data signal from the predetermined destination to the second terminal under the first condition; and

a third buffer having an input terminal coupled to the first terminal and an output terminal coupled to the second terminal, the third buffer being enabled under a second condition to transfer the data signal from the first terminal to the second terminal.

5,910,967
PRAGMATIC ENCODER AND METHOD THEREFOR

Mark J. Vanderaar, Medina, Ohio, assignor to Sicom, Inc., Scottsdale, Ariz.

Filed Oct. 20, 1997, Appl. No. 954,550
Int. Cl.[6] H04L *5/12*; **H03M** *13/12*
U.S. Cl. 375—265 **15 Claims**

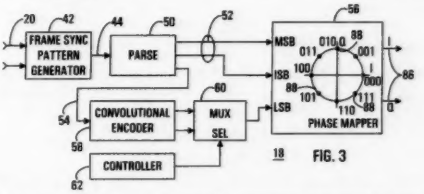


FIG. 3

1. An apparatus for pragmatically encoding information bits to be communicated at a rate of three or more bits per unit interval, said apparatus comprising:

a parsing circuit for distributing said information bits;

a convolutional encoder coupled to said parsing circuit, said convolutional encoder being configured to produce at least two convolutionally encoded bits for each information bit processed through said convolutional encoder;

a phase mapping circuit coupled to said parsing circuit, said phase mapping circuit being configured to receive at least two of said information bits from said parsing circuit per unit interval; and

a multiplexing circuit, coupled between said convolutional encoder and said phase mapping circuit, said multiplexing circuit being configured to route no more than one of said convolutionally encoded bits produced for each information bit received by said convolutional encoder to said phase mapping circuit per unit interval.

5,910,968

CONTINUOUS PHASE MODULATION DIGITAL COMMUNICATION SYSTEM

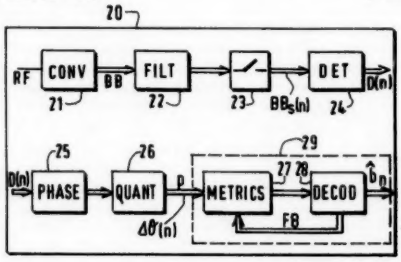
Antoine Chouly, Paris; Américo Brajal, Villeneuve-le-Roi, and Josep Casals Castané, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 18, 1997, Appl. No. 800,447

Claims priority, application France, Feb. 21, 1996, 96 02148

Int. Cl.[6] H04L *27/18;27/22;* **H03D** *3/22*

U.S. Cl. 375—279 **9 Claims**



1. A digital communication system (**5**) comprising transmission means (**10**) which are formed by modulation means (**14**) for producing a radio-frequency signal (RF), said radio frequency signal is modulated by digital data (**12**) according to a continuous phase modulation, and receiving means (**20**) which are formed by converting means (**21**) for converting the received radio-frequency signal (RF) into a baseband signal (BB), detection means (**24**) for detecting the continuous phase modulation of the baseband signal and sequential decoding means (**29**) for extracting the digital data from the detected signal, characterized in that the detection means perform a differential detection, and the sequential decoding means being such that they correct intersymbol interference generated by the differential detection at the receiving end.

5,910,969

METHOD OF DETECTING DC-FREE SEQUENCES

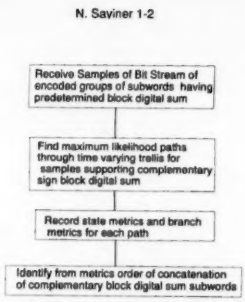
Necip Sayiner, Neshanic, and Emina Soljanin, Summit, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 5, 1996, Appl. No. 744,255

Int. Cl.[6] H03D *1/00*

U.S. Cl. 375—341 **11 Claims**

1. A method of decoding a sequence of samples received over a communications channel representing a length k binary bit stream encoded as a sequence of bipolar symbols comprised of q groups


N. Saviner 1-2
Receive Samples of Bit Stream of encoded groups of subwords having predetermined block digital sum
Find maximum likelihood paths through time varying trellis for samples supporting complementary sign block digital sum
Record state metrics and branch metrics for each path
Identify from metrics order of concatenation of complementary block digital sum subwords

of L symbols, each length L group of said symbols corresponding to one of 2^m subwords having a predetermined block digital sum, said subwords having been encoded according to an inner rate m/L code and concatenated into blocks of complementary sign block digital sum according to an outer rate p/q code, where p is one part of said length k sequence and qm is the remaining part, comprising the steps of:

a. finding, for each group of L samples, the maximum likelihood paths through a trellis of said inner rate p/q code for said subwords having complementary sign block digital sums of +q and of −q;

b. recording the cumulative state metrics and cumulative branch metrics for each of said paths; and

c. identifying from said cumulative metrics for each said group of L samples a corresponding branch in a trellis for said outer rate m/L code to determine the order of concatenation of said subwords.

5,910,970

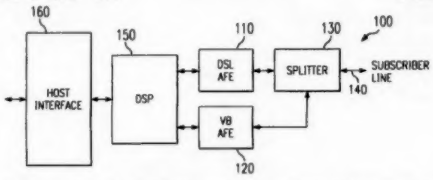
MDSL HOST INTERFACE REQUIREMENT SPECIFICATION

Xiaolin Lu, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of application No. 08/645,020, May 9, 1996. This application Oct. 31, 1996, Appl. No. 739,398.

Int. Cl.[6] H04L *23/00;* **H04B** *1/38*

U.S. Cl. 375—377 **1 Claim**



1. A method for interfacing modem hardware with a host operating system comprising the steps of:

a) calling a defined set of host interface functions for command/control

b) calling a defined set of host interface functions for link connection management

c) calling a defined set of host interface functions for data sending/receiving, and

d) calling a defined set of host interface functions for synchronization between voice-band audio and above voice-band video, and

e) calling a defined set of host interface functions to use the voice-band as control channel and above voice-band for the data channel.

•

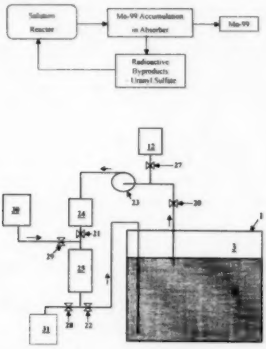
5,910,971
METHOD AND APPARATUS FOR THE PRODUCTION AND EXTRACTION OF MOLYBDENUM-99

Nikolai N. Ponomarev-Stepnoy; Vladimir A. Pavshook; Grigoriy F. Bebikh; Vladimir Ye. Khvostionov; Peter S. Trukhlyaev, and Ivan K. Shvetsov, all of Moscow, Russian Federation, assignors to TCI Incorporated, Albuquerque, N. Mex.

Filed Feb. 23, 1998, Appl. No. **28,183**

Int. Cl.[6] G21G 1/02

U.S. Cl. 376—189 **13 Claims**



1. A method of collecting molybdenum-99 from fission products produced in a nuclear reactor, the method comprising:

providing a homogeneous solution nuclear reactor having a 20 to 100 kilowatt rating;

using a uranyl sulfate solution as a homogeneous fissionable material in the reactor;

running the reactor, thereby produce fission products including molybdenum-99 in the uranyl sulfate solution;

shutting down the reactor and allowing it to cool down;

pumping the uranyl sulfate solution from the top of the reactor through a heat exchanger means to cool the uranyl sulfate solution to below 30° C.;

passing the cooled uranyl sulfate solution to a column containing a sorbent for the selective absorption of Mo-99 and returning the non-absorbed portion of the uranyl sulfate back to the bottom of the reactor, the process continuing until substantially all of the uranyl sulfate solution has passed through the sorbent;

thereafter passing water through the sorbent column, said water being derived from recombining the H_2 and O_2 gases given off during the running of the reactor to thereby maintain the concentration of the uranyl sulfate solution; and

thereafter passing nitric acid through the sorbent to extract the Mo-99 from the sorbent and collecting the resulting solution in a separate container.

5,910,972
BONE IMAGE PROCESSING METHOD AND APPARATUS

Takeshi Ohkubo, and Kazuo Shimura, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

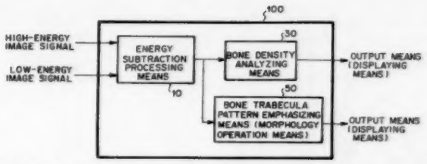
Filed Sep. 25, 1997, Appl. No. 937,602

Claims priority, application Japan, Sep. 25, 1996, 8-253258; Sep. 27, 1996, 8-256943

Int. Cl.[6] G06T *5/00*

U.S. Cl. 378—54 **38 Claims**

1. A bone image processing method wherein two radiation images of a single object, which comprises a soft tissue and a bone tissue, are formed respectively with two kinds of radiation having different energy distributions, the two radiation images being to be subjected to energy subtraction processing, and information concerning the density of a bone constituent in the bone tissue is obtained from the two radiation images, the method comprising the steps of:



i) carrying out the energy subtraction processing on the two radiation images, a bone image, in which the pattern of the bone tissue in the object has been extracted or emphasized, being thereby formed,

ii) obtaining numerical information concerning the density of the bone constituent in accordance with said bone image, and

iii) carrying out a bone trabecula pattern emphasizing process on said bone image, information representing the form of bone trabeculae being thereby obtained.

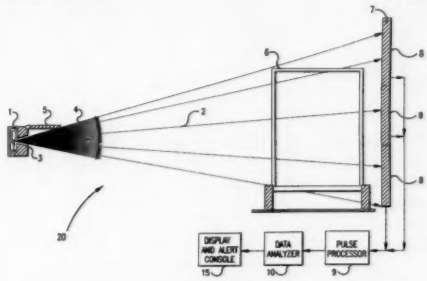
5,910,973
RAPID X-RAY INSPECTION SYSTEM

Lee Grodzins, Lexington, Mass., assignor to American Science and Engineering, Inc., Billerica, Mass.

Provisional application No. 60/022,044, Jul. 22, 1996. This application Jul. 22, 1997, Appl. No. 898,165.

Int. Cl.[6] G01V *5/00*

U.S. Cl. 378—57 **16 Claims**



1. An inspection system for inspecting an enclosure having a spatial frame of reference, comprising:

(a) a source of penetrating radiation;

(b) a collimator for forming the penetrating radiation into a beam having an orientation with respect to the enclosure;

(c) a scanner arrangement for varying the orientation of the beam with respect to the enclosure such that a component of the beam traverses the enclosure;

(d) a detector for producing flux position distribution information, disposed so as to intercept the component of beam traversing the enclosure;

(e) a signal-processing means for transforming the position distribution information to an absorption distribution matrix referred to the spatial frame of reference of the enclosure; and

(f) a controller for determining the presence of concealed material within the enclosure based at least on the absorption distribution matrix and a specified detection criterion.

5,910,974

METHOD FOR OPERATING AN X-RAY TUBE

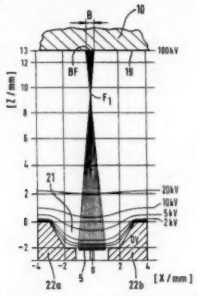
Helmut Kuhn, Weissenbrunn; Walter Doerfler, Lonnerstadt; Gerhard Loew, Baiersdorf, and Bernhard Ciolek, Stein, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Division of application No. 08/616,285, Mar. 15, 1996, Pat. No. 5,742,662. This application Oct. 3, 1997, Appl. No. 943,790.

Claims priority, application Germany, Mar. 20, 1995, 195 10 048.4

Int. Cl.[6] H01J *35/06*

U.S. Cl. 378—138 **6 Claims**



1. A method for operating an x-ray tube having an anode and a cathode mounted in a housing at a distance from each other, said cathode having an electron emitter, said method comprising the steps of:

emitting an electron beam from said electron emitter, said electron beam proceeding from said electron emitter to said anode and being incident on said anode in a focal spot;

placing said electron emitter in a focusing channel having at least one wall and focusing said electron beam, using said focusing channel, to a focus;

placing said at least one wall of said channel at an electrical potential which influences a position of said focus; and

varying said electrical potential for varying a distance of said focus from said focal spot for always maintaining said focus between said electron emitter and said focal spot.

5,910,975

ANATOMIC PHANTOM FOR EVALUATION OF PROJECTION RADIOGRAPHIC IMAGING SYSTEMS

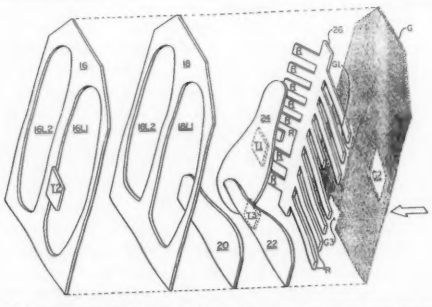
Carey E. Floyd, Chapel Hill, and Harrel G. Chotas, Durham, both of N.C., assignors to Duke University, Durham, N.C.

Division of application No. 08/493,838, Jun. 22, 1995, Pat. No. 5,651,046. This application May 14, 1997, Appl. No. 856,302.

This patent is subject to a terminal disclaimer

Int. Cl.[6] G01D *18/00*

U.S. Cl. 378—207 **15 Claims**



1. An anatomic X-ray phantom for use by an x-ray imaging equipment technician to test an X-ray imaging system, comprising:

(a) a radiographically uniform radiolucent material;

(b) one or more elements formed of a radiographically uniform material of a shape regionally similar but not anatomically identical to a corresponding human anatomy portion and each of a substantially uniform thickness to provide a uniform X-ray transmission intensity to a projected image, said one or more elements being disposed within said radiolucent material; and

(c) at least one test pattern adapted for X-ray quality assurance of the X-ray system when the phantom is in use with the X-ray system, and said test pattern being positioned inside the phantom in an area having radiopacity/radiolucency characteristics similar to the corresponding human anatomy portion.

5,910,976

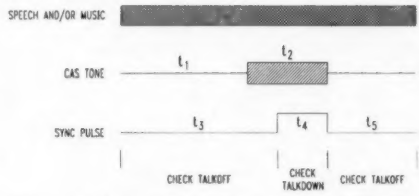
METHOD AND APPARATUS FOR TESTING CUSTOMER PREMISES EQUIPMENT ALERT SIGNAL DETECTORS TO DETERMINE TALKOFF AND TALKDOWN ERROR RATES

Charles William Berthoud, Nazareth, and James A. Johnanson, Emmaus, both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 1, 1997, Appl. No. 904,783

Int. Cl.[6] H04M *1/24*

U.S. Cl. 379—27 **16 Claims**



8. Apparatus for testing an alert signal detector comprising:

a test control unit adapted to generate a test alert signal and a SYNC signal, said SYNC signal having a fixed relationship with said alert signal which indicates when a valid alert signal should be detected;

a mixer adapted to mix said test alert signal with an audio signal to form a mixed signal which is applied to said alert signal detector; and

control circuitry adapted to receive said SYNC signal and an alert signal detector output and to generate an output which indicates to said test control unit whether said alert signal is detected during said SYNC signal.

5,910,977

DEVICE FOR TESTING TELECOMMUNICATION TERMINALS, IN PARTICULAR MOBILE RADIO TERMINALS, AND TELECOMMUNICATION TERMINAL ADAPTED TO BE TESTED BY MEANS OF A DEVICE OF THIS KIND

Philippe Torregrossa, Origne, France, assignor to Alcatel Mobile Phones, Paris, France

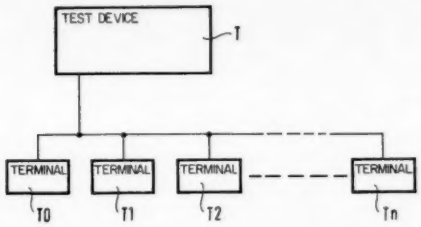
Filed Nov. 1, 1995, Appl. No. 551,426

Claims priority, application France, Nov. 9, 1994, 94 13465

Int. Cl.[6] H04M *1/24;* **H04B** *17/00;* **H04J** *1/16*

U.S. Cl. 379—29 **11 Claims**

1. A device for testing telecommunication terminals for multiple access telecommunication systems using a given multiplex structure, which device includes means for transmitting test information between said test device and a plurality of terminals under test by multiplexing in accordance with said given multiplex structure, wherein said device links to said terminals under test, thereby



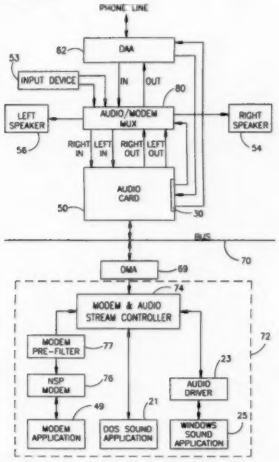
enabling a simultaneous test of said terminals, and then performs said simultaneous test without establishing a subsequent link to said terminals under test.

5,910,978

AUDIO/MODEM INTERFACE UNIT

Benjamin Maytal, Mevasseret Zion, and Aryeh Lezerovitz, Ramat Aviv, both of Israel, assignors to Smart Link Ltd., Netanya, Israel

Filed Mar. 3, 1997, Appl. No. 810,264
Claims priority, application Israel, Mar. 21, 1996, 117609
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93.01 **17 Claims**



6. A combined audio and modem interface unit comprising:

an audio component having two internal input and two internal output channels and selectably connectable to at least an audio left port, an audio right port and a telephone port;

an audio/modem signal processing unit for separately processing modem and audio signals received from said audio component; and

where said audio/modem signal processing unit is operative within a central processing unit (CPU) of a computer system and comprises;

a native signal processing modem for processing said modem signals;

an audio stream processor for processing said audio signals in monophonic and streophonic modes, as directed; and

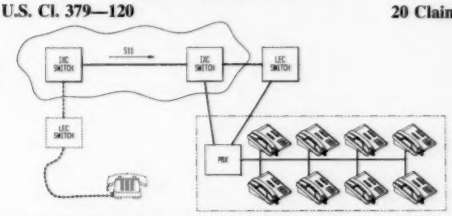
a data controller for directing the modem signals to said native signal processing modem whenever modem signals are present, for directing the audio signals, whenever present, to said audio stream processor and for indicating to said audio stream processor to operate in the monophonic mode whenever modem signals are present and in either of said monophonic and sterephonic modes otherwise.

5,910,979

METHOD FOR BILLING LOCAL COMMUNICATION SERVICES PROVIDED BY AN INTEREXCHANGE COMMUNICATION NETWORK

Anurag Goel, Tinton Falls, N.J.; Eugene M. Kancianic, Easton, Pa., and Fermin D. Peinado, Freehold, N.J., assignors to AT&T Corp., Middletown, N.J.

Filed Oct. 20, 1997, Appl. No. 954,652
Int. Cl.[6] H04B *15/00;3/42*
U.S. Cl. 379—120 **20 Claims**



1. In an interexchange communication network, a method for generating billing records associated with local communication service provided by the network that provides a direct communication connection with a customer, comprising the steps of:

receiving a code from the network, the code identifying a type of call to be placed to the customer,

determining whether the call is a POTS call,

when the call is a POTS call, determining whether the code includes a local service identifier,

when the code includes the local service identifier, determining whether the customer has subscribed to the network's local communication service,

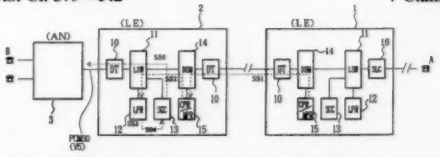
when the customer has subscribed to the network's local communication service, generating the billing record.

5,910,980

CALLING SUBSCRIBER INFORMATION NOTIFICATION

Hajime Ogasawara, and Yoshihiro Kaneko, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 21, 1997, Appl. No. 839,910
Claims priority, application Japan, Jun. 5, 1996, 8-142594
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—142 **7 Claims**



1. A calling subscriber information notification system, comprising:

a local exchange for generating a signal message including information concerning a calling subscriber terminal; and

an access network, located independent of said local exchange, for accommodating a plurality of subscriber terminals, and when a called subscriber has been registered for a called number notification service, sending the signal message sent from said local exchange to the called subscriber;

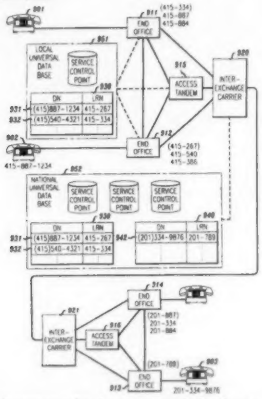
wherein said local exchange has an interface for call control, which is performed by a protocol set on a control channel provided together with a communication channel on a PCM transfer path and is connected to said access network across the PCM transfer path.

5,910,981

AUTOMATIC UPDATING OF A LOCAL DATABASE SUPPORTING LOCAL NUMBER PORTABILITY

Promod Kumar Bhagat, Morganville, N.J., and Dana Lee Garoutte, Wheaton, Ill., assignors to Lucent Technologies Inc., Murray Hill, and AT&T Corp., Middletown, both of N.J.

Filed Mar. 26, 1997, Appl. No. 824,786
Int. Cl.[6] H04M *7/00;3/42*
U.S. Cl. 379—219 **16 Claims**



1. In a telecommunications network having a centralized local number portability database, a method of processing a telephone call directed to a terminating switch which does not serve a called directory number comprising the steps of:

accessing a database within a switch for routing said call;

routing said call in accordance with data provided from said database within said switch;

responsive to detecting that said terminating switch does not serve said called directory number, generating a release message for said call, said release message having a cause code indicating that no line has been found corresponding to a directory number of said call in the switch transmitting said release message;

responsive to receiving said release message, comparing a response received from said centralized local number portability database shared by a plurality of switches with data of said database within said switch; and

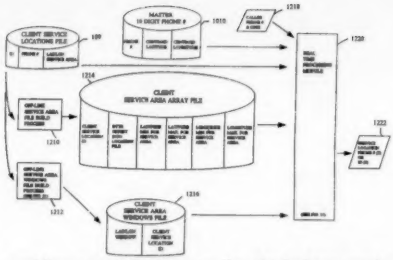
if the two data quantities do not match, routing the call in accordance with the data received from said centralized local number portability database and updating the database within said switch with data of said local number portability database.

5,910,982

AUTOMATIC ROUTING AND INFORMATION SYSTEM FOR TELEPHONIC SERVICES

James D. Shaffer, Rancho Santa Fe, Calif., and George G. Moore, Great Falls, Va., assignors to Murex Securities, Ltd., Douglas, United Kingdom

Continuation of application No. 08/659,318, Jun. 6, 1996, which is a continuation-in-part of application No. 08/598,392, Feb. 8, 1996, Pat. No. 5,848,131, which is a continuation-in-part of application No. 08/365,325, Dec. 28, 1994, Pat. No. 5,506,897, which is a continuation of application No. 08/020,653, Feb. 22, 1993, abandoned. This application Jun. 19, 1998, Appl. No. 100,305.
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—220 **72 Claims**



6. A method of generating a database for linking a caller telephone number to a client service location using an automated computer system, wherein the telephone number is indicative of a location of a caller, the method comprising:

providing a predefined master list of telephone numbers corresponding with geographic locations defined by spatial coordinates;

supplying a list of client service locations, wherein each client service location has a geographically defined client service area;

making a computerized determination of the graphic spatial coordinate overlapping relationships between the client service areas and the geographic locations corresponding with said telephone numbers; and

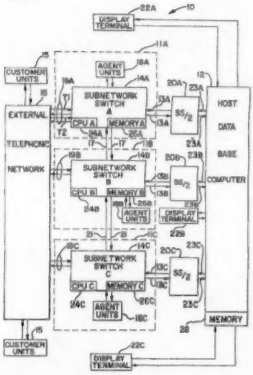
linking telephone numbers from said predefined master list to client service locations based on the computerized determination.

5,910,983

APPARATUS AND METHOD FOR IDENTIFYING RECORDS OF OVERFLOWED ACD CALLS

Anthony J. Dezonno, Chicago; Roger A. Sumner, Batavia, and James J. Bryla, Naperville, all of Ill., assignors to Rockwell Semiconductor Systems, Inc., Newport Beach, Calif.

Filed May 19, 1997, Appl. No. 858,601
Int. Cl.[6] H04Q *3/64*
U.S. Cl. 379—266 **48 Claims**



19. Apparatus for providing an address pointer to a host computer for a call record of a telephone call received from a public switched telephone network (PSTN) and overflowed from a source automatic call distributor to a destination automatic call distributor in a call distribution system using telescripted call control, the call record having been stored under a call identifier of the source automatic call distributor in a memory of the host computer serving both the source automatic call distributor and the destination automatic call distributor, such apparatus comprising:

means for determining that a call attribute of the call has exceeded an overflow parameter; and

means, coupled to the means for determining, for executing a call status telescript sequence by the source automatic call distributor when the means for executing determines that the call attribute exceeds the overflow parameter, said telescript sequence being adapted to enter a call identifier assigned by the source automatic call distributor and an identifier of the source automatic call distributor into a call overflow identification table of the host computer.

5,910,984

FAULT TOLERANT SERVICE-PROVIDING APPARATUS FOR USE IN A TELECOMMUNICATIONS NETWORK

Colin Low, 19 Parklands, Wooton-under-Edge, Gloucestershire GL12 7LT, United Kingdom

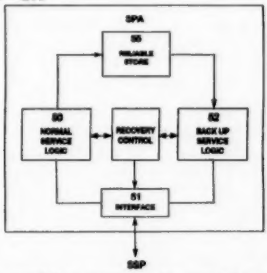
PCT No. PCT/GB94/01257, § 371 Date Dec. 6, 1995, § 102(e) Date Dec. 6, 1995, PCT Pub. No. WO94/30027, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 10, 1994, Appl. No. 553,632

Claims priority, application United Kingdom, Jun. 14, 1993, 9312246

Int. Cl.[6] **H04M** *3/42;3/00*

U.S. Cl. 379—279 **26 Claims**



1. Service providing apparatus for providing telephonic voice and data call processing services to a switching center of a telecommunications network, said switching center being operative to establish temporary telephonic voice and/or data call connections between separate end users, said services being provided for telephonic voice and/or data call segments which the switching center sets up, maintains, and clears, said service-providing apparatus comprising:

first service logic apparatus for normally providing said services to the switching center, at least in respect of set up of call segments, in response to requests for such services, at least some of said services involving multiple service-provision actions by the first service logic apparatus;

second service logic apparatus for providing said services to the switching center in case of failure of the first service logic apparatus;

recovery apparatus responsive to failure of the first service logic apparatus to bring into operation said second service logic apparatus; and

a backup store;

the first service logic apparatus, when providing a service involving multiple service-provision actions for a particular call segment, being operative only after completing at least some of said service-provision actions, if any, that are required during set up of said particular call segment, to save to said backup store state data concerning service provision to said particular call segment, and said second service logic apparatus, on being brought into operation, retrieving from said backup store, at least when needed, said state data stored therein by the first service logic apparatus, said state data being needed by said second service logic apparatus to complete the provision to said particular call segment of the service which the first service logic apparatus was providing when the first service logic apparatus failed.

5,910,985

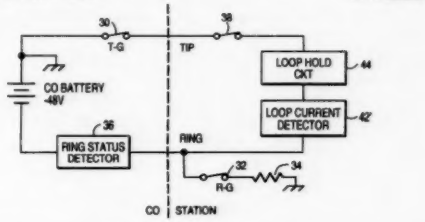
GROUND START AND TIP GROUND DETECTION WITHOUT THE USE OF -48V OR TIP BAIT CIRCUIT

Thomas Fenn, San Jose, and Brian Robert Carey, Cupertino, both of Calif., assignors to Siemens Information and Communication Networks, Inc., Boca Raton, Fla.

Filed Jun. 23, 1997, Appl. No. 880,334

Int. Cl.[6] **H04M** *1/00*

U.S. Cl. 379—382 **16 Claims**



1. A loop current detector for a telephone circuit connected to a telephone company central office circuit having TIP and GROUND conductors forming a current loop connected to a central office power supply said detector having a ground start mode when one or both of said TIP and GROUND conductors are grounded and a normal mode when said TIP and GROUND conductors are not grounded, the detector comprising:

a first circuit configured to detect the current in said current loop in the ground start mode; and

a second circuit configured to detect the current in said current loop in the normal mode;

said first and second circuits adapted to detect one or more loop current levels as a function of the power supply voltage at said central office and the loop resistance in said current loop.

5,910,986

METHODS AND APPARATUS FOR SENDING ELECTRONIC DATA SIGNALS

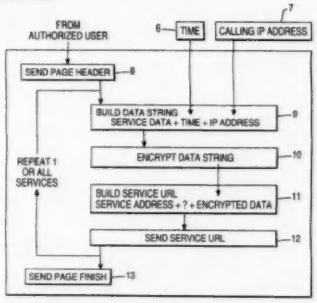
Lee G. Dove, Perthshire, United Kingdom, assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 2, 1997, Appl. No. 778,337

Claims priority, application United Kingdom, Sep. 13, 1996, 9619189

Int. Cl.[6] **G06F** *1/00*

U.S. Cl. 380—23 **9 Claims**



7. An apparatus for transmitting electronic data signals across an open communications network from a server station to a client station upon receipt of a request signal from the client station for such data signals, the apparatus comprising:

means for checking whether the request signal received at the server station includes a validation stamp, the validation stamp being selected from a time stamp and a location stamp;

validation means for providing an approval signal if the stamps are valid; and

transmission means for sending the requested data signals only if an approval signal is provided by the validation means.

5,910,987

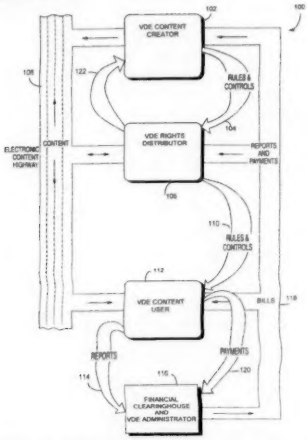
SYSTEMS AND METHODS FOR SECURE TRANSACTION MANAGEMENT AND ELECTRONIC RIGHTS PROTECTION

Karl L. Ginter, Beltsville; Victor H. Shear, Bethesda, both of Md.; Francis J. Spahn, El Cerrito, and David M. Van Wie, Sunnyvale, both of Calif., assignors to InterTrust Technologies Corp., Sunnyvale, Calif.

Continuation of application No. 08/388,107, Feb. 13, 1995, abandoned. This application Dec. 4, 1996, Appl. No. 760,440.

Int. Cl.[6] **H04L** *9/32;* **G06F** *17/60*

U.S. Cl. 380—24 **2 Claims**



1. A method for auditing the use of at least one resource with a secure operating environment, said method comprising:

securely receiving a first control from a first entity external to said operating environment;

securely receiving a second control from a second entity external to said operating environment, said second entity being *different from said first entity;*

using at least one resource;

securely sending to said first entity in accordance with said first control, first audit information concerning use of said resource; and

securely sending to said second entity in accordance with said second control, second audit information concerning use of said resource, said second audit information being at least in part different from said first audit information.

5,910,988

REMOTE IMAGE CAPTURE WITH CENTRALIZED PROCESSING AND STORAGE

Claudio R. Ballard, Lloyd Harbor, N.Y., assignor to CSP Holdings, Inc., Lloyd Harbor, N.Y.

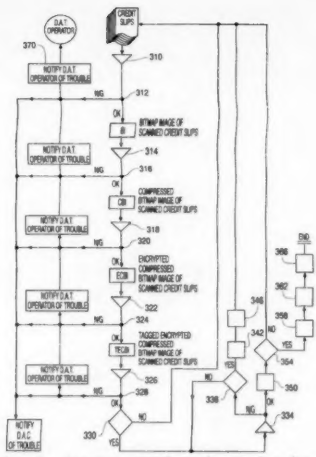
Filed Aug. 27, 1997, Appl. No. 917,761

Int. Cl.[6] **H04L** *9/00*

U.S. Cl. 380—24 **50 Claims**

1. A system for central management, storage and report generation of remotely captured paper transactions from documents and receipts comprising:

one or more remote data access subsystems for capturing and sending paper transaction data and subsystem identification information comprising at least one imaging subsystem for


D.A.T. OPERATOR
CREDIT SLIPS
NOTIFY D.A.T. OPERATOR OF TROUBLE
BITMAP IMAGE OF SCANNED CREDIT SLIPS
COMPRESSED BITMAP IMAGE OF SCANNED CREDIT SLIPS
ENCRYPTED COMPRESSED BITMAP IMAGE OF SCANNED CREDIT SLIPS
TAGGED ENCRYPTED COMPRESSED BITMAP IMAGE OF SCANNED CREDIT SLIPS
NOTIFY D.A.C. OF TROUBLE
END

capturing the documents and receipts and at least one data access controller for managing the capturing and sending of the transaction data;

at least one central data processing subsystem for processing, sending, verifying and storing the paper transaction data and the subsystem identification information comprising a management subsystem for managing the processing, sending and storing of the of the transaction data; and

at least one communication network for the transmission of the transaction data within and between said one or more data access subsystems and said at least one data processing subsystem, with the data access subsystem providing encrypted subsystem identification information and encrypted paper *transaction data to the data processing subsystem.*

5,910,989

METHOD FOR THE GENERATION OF ELECTRONIC SIGNATURES, IN PARTICULAR FOR SMART CARDS

David Naccache, Paris, France, assignor to Gemplus, Gemenos, France

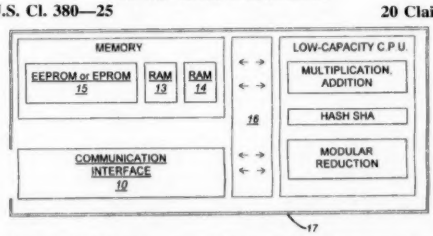
PCT No. PCT/FR96/00612, § 371 Date Mar. 6, 1997, § 102(e) *Date Mar. 6, 1997,* PCT Pub. No. WO96/33567, PCT Pub. Date Oct. 24, 1996

PCT Filed Apr. 22, 1996, Appl. No. 765,483

Claims priority, application France, Apr. 20, 1995, 95 04753; Jun. 27, 1995, 95 07668

Int. Cl.[6] **H04L** *9/00;9/06;9/30*

U.S. Cl. 380—25 **20 Claims**



18. A method for the generation of digital signatures of messages by a signer unit and for the checking of these signatures by a verifier unit, the signer unit comprising a device that computes, communicates and retains data elements, the device comprising at least one electrically programmable non-volatile memory, according to which there are prepared enciphered data elements constituting signature coupons that are loaded into the non-volatile memory and that are used by the signer unit to sign messages, chiefly characterized in that:

the coupons are compressed by the application of a compression function H, also called a hash function, by a certified authority before being loaded into the memory, and in that this method comprises the following exchanges:

a message m is transmitted and this message must be certified by a signature,

the signer unit sends a coupon r_i to the verifier unit,

the verifier unit sends a random number a to the signer unit and activates a timer,

the signer unit computes the signature s of the message and sends it to the verifier unit,

the verifier unit stops the timer and ascertains that the signature has been obtained through the secret key held in the signer unit and the coupon r_i received, this checking is done by checking the equality $v=f(r_i, s, m)=r_i$;

the verifier unit accepts the signature if the condition of checking $v=r_i$ is fulfilled and if the measured time does not exceed an allocated predetermined period.

5,910,990

APPARATUS AND METHOD FOR AUTOMATIC EQUALIZATION OF PERSONAL MULTI-CHANNEL AUDIO SYSTEM

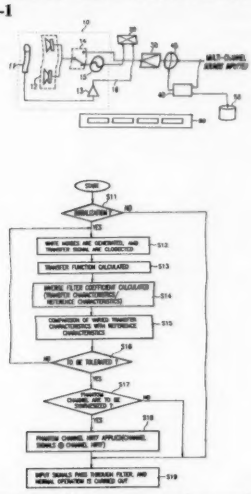
Dae-Young Jang, Daejeon, Rep. of Korea, assignor to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecom, Seoul, both of Rep. of Korea

Filed Jun. 13, 1997, Appl. No. 874,214

Claims priority, application Rep. of Korea, Nov. 20, 1996, 96-55696

Int. Cl.[6] H04R *5/00*; **H03G** *5/00*

U.S. Cl. 381—1 **5 Claims**



1. An automatic equalizing apparatus for a multi-channel audio system comprising:

transfer characteristic measuring means for converting digital white noise signals to analog signals, said transfer characteristic measuring means comprising:

speakers through which the white noise signals are sequentially reproduced;

a microphone array for collecting respective channel transfer signals at a listening position;

transfer function calculating means for determining presence or absence of speakers and calculating transfer characteristics between respective speakers and the listening position based on the white noise signals and the transfer signals of said transfer characteristic measuring means; calculating inverse characteristics between the transfer characteristics of real speakers and reference positions of the respective speakers; and compensating the calculated transfer characteristics for size and position of a video media;

reproduction characteristic correcting means for correcting sound reproduction characteristics by forming a filter based on the calculated transfer characteristics from said transfer function calculating means;

an audio characteristic data base for storing sound characteristics of frontal left/right sides, a central portion, rear left/right sides and an upper side of a reference speaker arrangement of the audio system;

a phantom channel synthesizing means for synthesizing input signals into signals of arbitrary directions through two frontal channels based on the sound characteristics stored in said audio characteristic data base so as to reproduce sounds beyond output ranges of the speakers connected to the audio system;

user interface means for selecting an automatic adjustment of the audio system; inputting a speaker arrangement, a reference speaker arrangement and a size of the video media; and displaying a current system setup status.

5,910,991

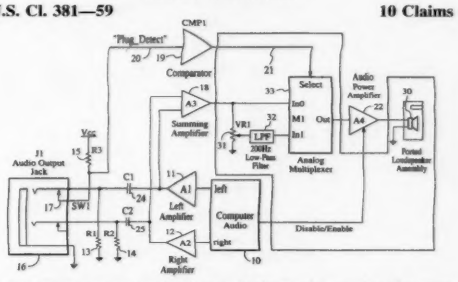
METHOD AND APPARATUS FOR A SPEAKER FOR A PERSONAL COMPUTER FOR SELECTIVE USE AS A CONVENTIONAL SPEAKER OR AS A SUB-WOOFER

Douglas M. Farrar, Los Altos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 2, 1996, Appl. No. 692,031

Int. Cl.[6] H04R *29/00*

U.S. Cl. 381—59 **10 Claims**



1. A computer system having multiple speaker modes, the computer system capable of being coupled to an external speaker, the computer system comprising:

a microprocessor;

a default speaker for providing an audio output, the default speaker being capable of providing good low frequency response as well as reasonable mid- and high-frequency response;

a speaker input with at least two modes, a first mode for providing a wide frequency response over the default speaker and a second mode for providing a low frequency response over the default speaker, the input for selecting which of the at least two modes is selected for the default speaker; and

an output jack coupled to the speaker input and capable of being connected to the external speaker;

wherein the speaker input further selects the first mode or the second mode in response to a signal indicating whether the output jack is used to couple the external speaker to the computer system; and

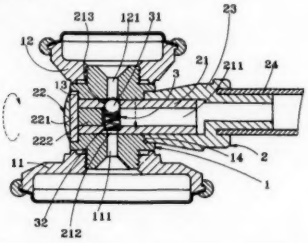
wherein when the second mode is selected, the default speaker provides the low frequency response, the external speaker provides a higher frequency response, and the computer system is capable of providing sound over the default speaker and the external speaker.

5,910,992

STETHOSCOPE WITH AN INDEXING DETENT

Chi-Sheng Ho, No. 65, Cheng Tien Rd., Tu Cheng, Taipei Hsien, Taiwan

Filed Jan. 21, 1998, Appl. No. 9,875
Int. Cl.[6] A61B *7/04*
U.S. Cl. 381—67 **4 Claims**



1. A stethoscope with an indexing detent comprising a hollow body, a rotary tubular shaft which is clamped inside and can rotate around said hollow body, and an indexing detent, wherein

said hollow body comprises a plurality of microphones for receiving acoustic waves of different frequencies, and a plurality of openings with the same diameters as the microphones;

said rotary tubular shaft comprises an axial hole whose central axis is aligned with that of said rotary tubular shaft, and a plurality of circular through holes at the locations directly and respectively coupled to said openings concurrently when said rotary shaft is turned to a position, wherein the central axes of said circular through holes are aligned with the diameter of said axial hole, and their diameters are larger than that of said openings for the induced acoustic wave from said microphone travelling through said circular through holes into said axial hole; and

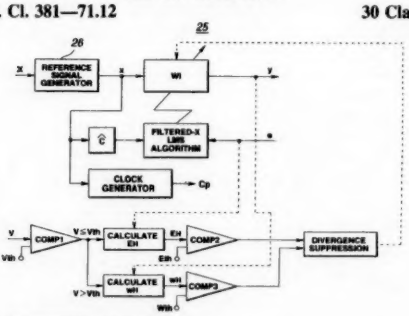
said indexing detent comprises a lock ball inside one of said circular through holes, and a resilient element inside said rotary tubular shaft, wherein the resilient element pushes said lock ball outward.

5,910,993

APPARATUS AND METHOD FOR ACTIVELY REDUCING VIBRATION AND/OR NOISE

Kazushige Aoki; Tutomu Hamabe; Shigeki Satoh, all of Kanagawa, and Yousuke Akatu, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 16, 1997, Appl. No. 858,041
Claims priority, application Japan, May 16, 1996, 8-121910
Int. Cl.[6] G10K *11/16*
U.S. Cl. 381—71.12 **30 Claims**



1. An apparatus comprising:

g) a periodic wave generating source;

h) a control wave generating source so arranged and constructed as to be enabled to generate and output a control wave to be interfered against a periodic wave developed on the periodic wave generating source;

i) a reference signal generator so arranged and constructed as to generate and output a reference signal representing a developed condition of the periodic wave from the periodic wave generating source;

j) a residual wave detector so arranged and constructed as to detect a residual wave after the interference of the control wave outputted by the control wave generating source against the periodic wave developed on the periodic wave generating source and output a residual wave signal representing the residual wave; and

k) a controller having; an adaptive digital filter so arranged and constructed as to filter the reference signal therethrough to generate and output a drive signal to drive the control wave generating source to generate and output the control wave; an adaptive algorithm in accordance with which filter coefficients of the adaptive digital filter are updated on the basis of either the reference signal or the residual wave signal so as to control a reduction of the periodic wave; a sampler so arranged and constructed as to sample at least one of either or both of the drive signal and the residual wave signal for a predetermined sampling period; a summer so arranged and constructed as to sum two sampled values of at least one of either or both of the drive signal outputted by the adaptive digital filter and the residual wave signal outputted by the residual wave detector; and a divergence determinator so arranged and constructed as to determine whether a higher order divergence of a control over a transmission of the periodic wave from the periodic wave generating source toward an external therefrom occurs on the basis of the sum of the two sampled values of either or both of the drive signal or the residual wave signal, phases of the two sampled values being mutually deviated from each other by an approximately half period of a fundamental order of the corresponding drive signal or residual wave signal.

29. A method for actively reducing a periodic vibration and/or noise developed on a periodic vibration and/or noise generating source and transmitted from the periodic vibration and/or noise generating source to an external therefrom, comprising the steps of:

a) providing an adaptive digital filter;

b) providing an adaptive algorithm;

c) updating sequentially filter coefficients of the adaptive digital filter so as to execute a reduction control for the periodic vibration or noise;

d) developing a residual wave signal representing a residual vibration or noise state of the external;

e) sampling two values at a predetermined sampling period which would cancel a fundamental order component of either an output signal of the adaptive digital filter or the residual wave signal if the two values were added together;

f) summing the two sampled values; and

g) determining whether a divergence of the reduction control occurs on the basis of the summed sampled values.

5,910,994

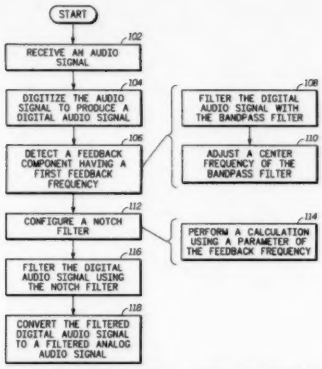
METHOD AND APPARATUS FOR SUPPRESSING ACOUSTIC FEEDBACK IN AN AUDIO SYSTEM

John E. Lane, Satellite Beach, Fla.; Dan Hoory, and Johnny Choe, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of application No. 08/511,673, Aug. 7, 1995, Pat. No. 5,717,772. This application Jun. 3, 1997, Appl. No. 868,318.
Int. Cl.[6] H04B *15/00*
U.S. Cl. 381—93 **20 Claims**

1. A method for detecting N feedback frequencies in a digitized signal where N is a finite positive integer greater than or equal to 2, the method comprising the steps of:

constructing an array of digital filters, the array being arranged in a tree structure having N branches, wherein each branch of the N branches includes N filters, wherein N-1 of the N filters


START
RECEIVE AN AUDIO SIGNAL
DIGITIZE THE AUDIO SIGNAL TO PRODUCE A DIGITAL AUDIO SIGNAL
DETECT A FEEDBACK COMPONENT HAVING A FIRST FEEDBACK FREQUENCY
CONFIGURE A NOTCH FILTER
FILTER THE DIGITAL AUDIO SIGNAL USING THE NOTCH FILTER
CONVERT THE FILTERED DIGITAL AUDIO SIGNAL TO A FILTERED ANALOG AUDIO SIGNAL
FILTER THE DIGITAL AUDIO SIGNAL WITH THE BANDPASS FILTER
ADJUST A CENTER FREQUENCY OF THE BANDPASS FILTER
PERFORM A CALCULATION USING A PARAMETER OF THE FEEDBACK FREQUENCY

in each branch are notch filters that attenuate the digitized signal at N-1 of the N feedback frequencies, wherein one of the N filters in each branch is a bandpass filter that passes one of the N feedback frequencies;

filtering the digitized signal using the array of digital filters such that each of the N branches of the array of digital filters detects one of the N feedback frequencies to produce N detected feedback frequencies.

5,910,995

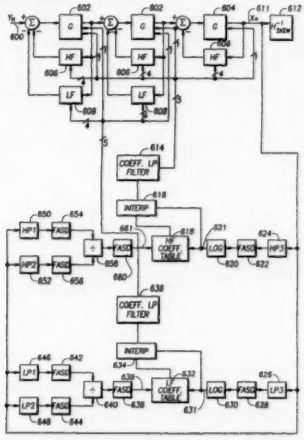
DSP DECODER FOR DECODING ANALOG SR ENCODED AUDIO SIGNALS

Laura Mercs, Huntington Beach; Paul M. Embree, Irvine, and Casper W. Barnes, Murrieta, all of Calif., assignors to Sony Corporation of Japan, Japan, and Sony Pictures Entertainment Inc., Park Ridge, N.J.

Filed Nov. 22, 1995, Appl. No. 562,286

Int. Cl.[6] H03G *7/00*

U.S. Cl. 381—106 **26 Claims**



1. For an audio signal which has been encoded using an analog encoder having an encoder transfer function, a method of decoding said encoded audio signal comprising the steps of:

providing a plurality of digital filter stages in cascade, wherein at least one of the digital filter stages includes at least one feedback path having a feedback-path transfer function which returns a feedback signal to be summed with the encoded audio signal, said at least one digital filter stage further including a forward path including a gain element having a forward-path transfer function for processing the summed signal said feedback-path transfer function and forward-path transfer function defining a dynamic decoder transfer function:

filtering the encoded audio signal through said digital filter stages to provide a decoded signal; and

modifying at least one of said feedback-path and forward-path transfer functions in accordance with the decoded signal so that the decoder transfer function emulates the encoder transfer function.

5,910,996

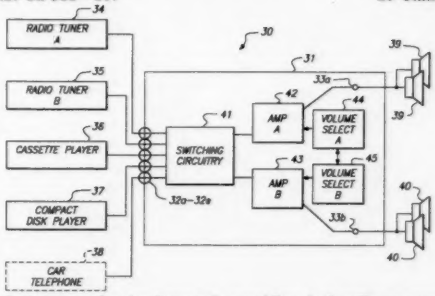
DUAL AUDIO PROGRAM SYSTEM

Philip E. Eggers, 5366 Reserve Dr., Dublin, Ohio 43017, and Gerald J. Sanders, 1000 Northlake Shore Dr., Apt. 1008, Chicago, Ill. 60611

Continuation of application No. 08/398,951, Mar. 2, 1995. This application Mar. 21, 1997, Appl. No. 828,738. This patent is subject to a terminal disclaimer

Int. Cl.[6] H03G *3/00*

U.S. Cl. 381—107 **20 Claims**



1. Apparatus for simultaneously providing dual audio programs, the apparatus comprising:

circuitry for providing a plurality of audio programs, the circuitry including a first radio receiver;

circuitry for selecting first and second ones of the plurality of audio programs as first and second audio programs, respectively;

first and second volume selection means for selecting, respectively, first and second volume settings;

state selection means; and

means, responsive to the state selection means, for selectively interchanging, without cross-fading, between a first state in which the first audio program is reproduced at a volume determined by the first volume setting and the second audio program is reproduced at a volume determined by the second volume setting, and a second state in which the first audio program is reproduced at the volume determined by the second volume setting and the second audio program is reproduced at the volume determined by the first volume setting.

5,910,997

DIGITALLY PROGRAMMABLE HEARING AID COMMUNICABLE WITH EXTERNAL APPARATUS THROUGH ACOUSTIC SIGNAL

Ryuuichi Ishige, and Reishi Kondo, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 16, 1996, Appl. No. 732,879

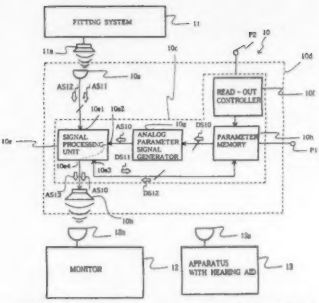
Claims priority, application Japan, Oct. 17, 1995, 7-268188

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—314 **12 Claims**

1. A hearing aid connectable to an apparatus for supplying parameters representative of hearing aid characteristics, comprising:

a voice-to-electric signal converter configured to generate a first electric signal representative of voice data information;



a voice reproducer responsive to a second electric signal representative of modified voice data information and configured to produce a voice;

a memory configured to store said parameters;

a signal processor connected between said voice-to-electric signal converter and said voice reproducer, and responsive to said parameters to generate said second electric signal through a signal processing on said first electric signal; and

an electric signal-to-acoustic signal converting means connected between said memory and said voice reproducer for generating an acoustic signal representative of said parameters,

in which said memory stores said parameters representative of said hearing aid characteristics as a part of a digital code, and said electric signal-to-acoustic signal converting means includes,

a read-out controller connected to said memory and configured to cause said memory to output said digital code,

an analog parameter signal generator connected to said memory and configured to convert said digital code to a first analog signal, and

an acoustic signal generator connected to said analog-parameter signal generator and responsive to said first analog signal to generate said acoustic signal,

wherein said read-out controller is responsive to an externally-received signal to cause said memory to output said digital code.

5,910,998

MAIL PROCESSING SYSTEM

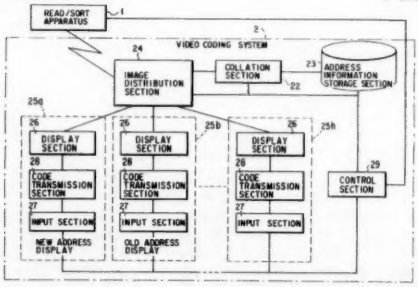
Hideto Yui, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 24, 1996, Appl. No. 685,858

Claims priority, application Japan, Jul. 24, 1995, 7-187311

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—101 **8 Claims**



1. A mail processing system for processing mail with address information, comprising:

recognition means for recognizing the address information on the mail and providing recognized address information;

display means for displaying an image of mail whose address information is not recognized by said recognition means;

input means for inputting the address information of the mail based on the image of the mail displayed on said display means;

address storage means for storing addresses of an area;

collation means for collating the address information inputted by said input means with the addresses stored in said address storage means and providing a collation result; and

address providing means for providing the address information inputted by said input means as a correct address of the mail whose address information is not recognized when the collation result provided by said collation means represents that the address information inputted coincides with the addresses stored in said address storage means.

5,910,999

INDIVIDUAL IDENTIFICATION APPARATUS BASED ON FREQUENCY DOMAIN CORRELATION OF PLURAL REFERENCE IMAGES AND A TARGET IMAGE

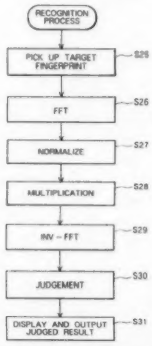
Naohisa Mukohzaka, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

Filed Nov. 20, 1996, Appl. No. 754,262

Claims priority, application Japan, Nov. 20, 1995, 7-325033

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—124 **22 Claims**



1. An individual identification apparatus for identifying an arbitrary individual with a specific individual, the apparatus comprising:

image pick up means for picking up a pattern of a predetermined body portion of a specific individual a plurality of times and for outputting a plurality of reference image signals for being stored, the image pick up means also picking up, a single time, a pattern of the predetermined body portion of an arbitrary individual desired to be identified with the specific individual and for outputting a single target image signal; and

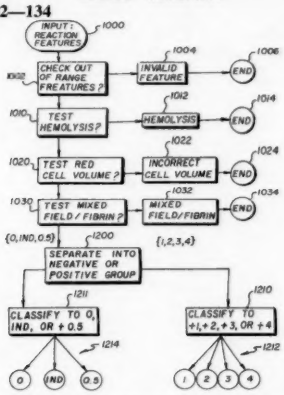
calculation processing means for electronically performing a Fourier transform on the plurality of reference image signals to obtain a plurality of Fourier transformed reference image signals, each Fourier transformed reference image signal being represented by a first complex indication, electronically performing a Fourier transform on the single target image signal to obtain a single Fourier transformed target image signal represented by a second complex indication, for superimposing the plurality of Fourier transformed reference image signals into a multiple filter indicated by a third complex indication, for electronically multiplying the multiple filter with the single Fourier transformed target image signal, and for electronically performing an inverse Fourier transform on the multiplied result to thereby obtain a similarity degree output indicative of similarity between the reference image signals and the single target image signal, thereby judging whether or not the arbitrary individual and the specific individual are the same individual.

5,911,000

DETECTING ABNORMAL REACTIONS IN A RED BLOOD CELL AGGLUTINATION

Jian Shen, Princeton, N.J., assignor to Ortho Diagnostic Systems, Inc., Raritan, N.J.

Filed Aug. 1, 1997, Appl. No. 904,506
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—134 **11 Claims**



1. A method for detecting abnormal reactions in a cassette used for classifying red blood cell agglutination, the method comprising the steps of:

a) inserting a patient blood sample into a cassette provided with agglutinating reagents and a column of microparticles;

b) centrifuging the cassette to force non-agglutinated blood cells to flow through said column while retaining agglutinated cells at indicative locations in said column;

c) producing on a detector array comprising a plurality of pixels, an image of said column and of blood cells distributed within and around said column;

d) correlating the image on said array with predefined classes of images representing agglutination reactions of known classes; and

e) prior to said step d), detecting the existence if any of an abnormality comprising errors in the processing of steps a), b) or c) that cause imaged features of the column or any pellet produced in the column to be out of range, wherein said errors comprise those represented by an abnormally large imbalance in the distribution of cells in said column when comparing one half of the column with the other half, or by an improperly shaped pellet of cells forced to the bottom of said column by said step b.

5,911,001

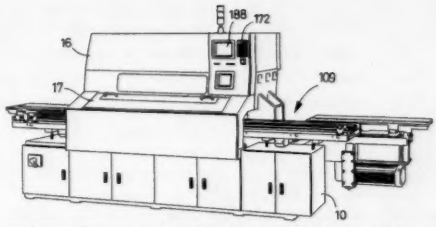
IMAGE PROCESSING APPARATUS

Tousuke Kawada, Chiryu, Japan, assignor to Fuji Machine Mfg. Co., Ltd., Chiryu, Japan

Continuation of application No. 08/546,680, Oct. 23, 1995, Pat. No. 5,754,677. This application Dec. 17, 1997, Appl. No. 991,992.
Claims priority, application Japan, Oct. 25, 1994, 6-260621
This patent is subject to a terminal disclaimer
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—141 **12 Claims**

1. An image processing apparatus comprising:

an image pick-up device which picks up an optical image of at least a portion of an actual object and a background thereof, said image pick-up device including a plurality of image pick-up elements each of which detects a light incident thereto and produces an electric signal indicative of an optical-characteristic value of the received light;



an image data memory which stores physical-image data representing said optical image picked up by said image pick-up device, said physical-image data defining a plurality of optical-characteristic values respectively corresponding to a plurality of picture elements forming said optical image, said physical-image data including a plurality of sets of picture-element data each of which represents an optical-characteristic value of a center of a corresponding one of said picture elements, indicated by the electric signal produced by a corresponding one of said image pick-up elements, in relation with a position of said one image pick-up element in said image pick-up device; and

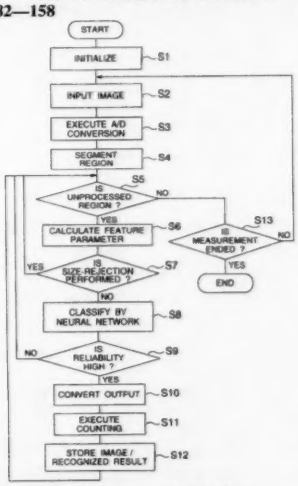
processing means for designating, independent of the respective centers of said picture elements, a plurality of virtual points on a virtual screen corresponding to a physical screen defined by said image pick-up elements, and calculating an optical-characteristic value corresponding to each of the designated virtual points, based on respective optical-characteristic values of respective centers of a plurality of picture elements neighboring a physical point on said physical screen which corresponds to said each designated virtual point.

5,911,002

PATTERN RECOGNITION SYSTEM

Satoshi Mitsuyama, Tokyo; Jun Motoike, Hachioji; Norio Oowada, Ibaraki-ken, and Yasuaki Kojima, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 18, 1996, Appl. No. 715,592
Claims priority, application Japan, Sep. 27, 1995, 7-249082
Int. Cl.[6] G06K *9/62*; G06E *1/00*
U.S. Cl. 382—158 **11 Claims**



1. A pattern recognition system comprising:

pattern recognition processing means having a network structure constructed of an input layer for inputting feature parameters

of a subject under recognition as input information, a hidden layer for processing said input information and an output layer for outputting a processed result, said pattern recognition processing means comparing output values of respective output nodes for constituting said output layer, corresponding to said input information, with each other;

storage means for storing a classification item corresponding to said output node whose output value is maximum, as a recognized result with respect to said input information;

reliability evaluating means for setting a reliability threshold value with respect to an output value of each of said output nodes and for evaluating reliability of said recognized result based upon the output value of each of said output nodes and said reliability threshold value with respect to the output value of each of said output nodes; and

memory which stores said reliability threshold values;

wherein, when said reliability evaluating means judges that the reliability is high, said recognized result is stored into said storage means.

5,911,003

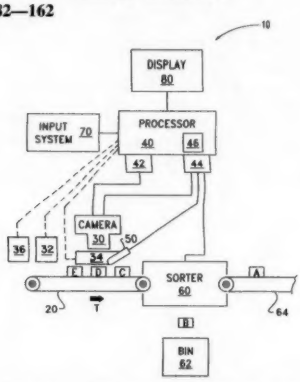
COLOR PATTERN EVALUATION SYSTEM FOR RANDOMLY ORIENTED ARTICLES

Richard A. Sones, Cleveland Heights, Ohio, assignor to Pressco Technology Inc., Solon, Ohio

Filed Apr. 26, 1996, Appl. No. 638,554

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—162 **40 Claims**



1. A method of inspecting a multicolor pattern on an item with a processor and an imaging device, comprising:

(a) moving the item by the imaging device to generate a number of image signals corresponding to the multicolor pattern;

(b) correlating each of a number of regions of the multicolor pattern to one of a number of reference color values with the processor using the image signals;

(c) modeling the multicolor pattern by deriving a number of test value sets with the processor each corresponding to one of the regions, each set having a first value representative of a first characteristic of a corresponding region and a second value representative of a second characteristic of the corresponding region; and

(d) comparing the sets to reference data with the processor to detect variation of the multicolor pattern.

5,911,004

IMAGE PROCESSING APPARATUS FOR DISCRIMINATING IMAGE CHARACTERISTICS USING IMAGE SIGNAL INFORMATION OBTAINED IN AN IMAGE SCANNING OPERATION

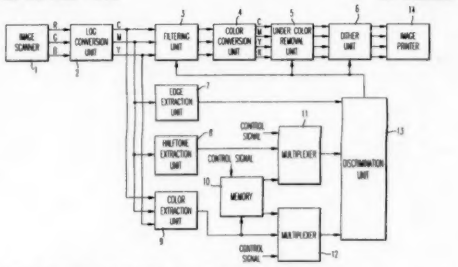
Satoshi Ohuchi, Hachiohji, and Sadao Takahashi, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 8, 1996, Appl. No. 646,766

Claims priority, application Japan, May 8, 1995, 7-109213

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—173 **14 Claims**



1. An image processing apparatus comprising:

image input means for scanning an original document and generating a plurality of image signals representing an image of said original document;

first image discriminating means for discriminating first image characteristics of the original document image with respect to each pixel thereof, to obtain first discriminating results;

second image discriminating means for discriminating second image characteristics of said original document image with respect to each predetermined size block region of pixels thereof, to obtain second discrimination results;

memory means for storing said second discrimination results; and

image processing means for processing said plurality of image signals in accordance with said first and second image discriminating results obtained from a first scanning of said original document, and for processing image signals generated by subsequent scans of said original document using said first discrimination results from said subsequent scans and using said stored second discrimination results for said subsequent scans.

5,911,005

CHARACTER RECOGNITION METHOD AND SYSTEM

Yukinaka Uchiyama, Narashino, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Nov. 20, 1995, Appl. No. 560,748

Claims priority, application Japan, Nov. 18, 1994, 6-284674; Aug. 8, 1995, 7-202555

Int. Cl.[6] G06K *9/00*

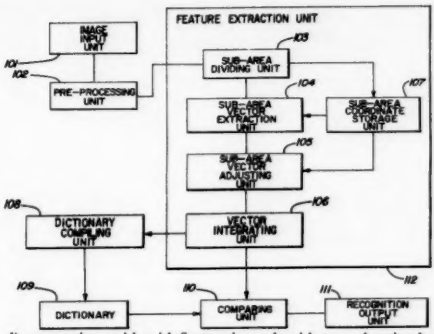
U.S. Cl. 382—187 **20 Claims**

1. A method of recognizing a predetermined set of standard images, each of the standard images having predetermined standard sub-areas, each of the predetermined standard sub-areas having a standard value, comprising the steps of:

a) dividing a sample image into a predetermined number of sample polygonal sub-areas, at least one of said sample polygonal sub-areas having a different size from a size of a corresponding one of said predetermined standard sub-areas;

b) extracting a sub-area sample feature value for each of said predetermined sample polygonal sub-areas;

c) determining a first ratio between said sub-area sample feature value and a predetermined size measure of each of said sample polygonal sub-areas as well as a second ratio between a corresponding feature value and a corresponding size measure of each of the predetermined standard sub-areas; and



d) comparing said said first ratio and said second ratio determined in said step c) for determining if said sample image matches said standard image.

5,911,006

METHOD AND APPARATUS FOR CONTROLLING A QUANTITY OF CODES REPRESENTATIVE OF IMAGE DATA

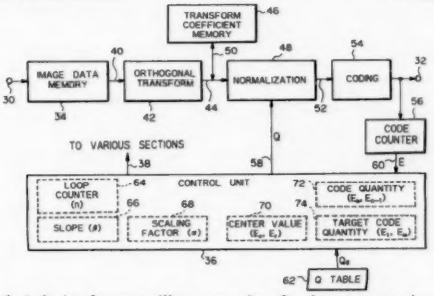
Kenji Funamoto, and Kenji Ito, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 6, 1997, Appl. No. 906,698

Claims priority, application Japan, Aug. 14, 1996, 8-214700

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—232 **14 Claims**



1. A device for controlling a quantity of codes representative of image data, comprising:

a first storage for storing image data representative of a single scene;

an orthogonal transforming circuit connected to said first storage for executing orthogonal transform with the image data to thereby output transform coefficients;

a normalizing circuit connected to said orthogonal transforming circuit for normalizing the transform coefficients in accordance with a value of a normalization factor to thereby output normalized transform coefficients;

a coding circuit connected to said normalizing circuit for coding the normalized transform coefficients by compression to thereby output compressed data;

a counter connected to an output of said coding circuit for counting a quantity of codes of the compressed data to thereby output a count; and

a control circuit for causing said first storage, said orthogonal transforming circuit, said normalizing circuit, said coding circuit and said counter to perform orthogonal transform, normalization and compression, and controlling, based on the count output from said counter, the quantity of codes to be output from said coding circuit;

said control circuit reading the image data out of said first storage while thinning said image data and applying resulting thinned image data to said orthogonal transforming circuit, said orthogonal transforming circuit subjecting said thinned image data to orthogonal transform to thereby output the transform coefficients;

said control circuit feeding an initial value of the normalization factor to said normalizing circuit, said normalizing circuit normalizing the transform coefficients with said initial value;

said counter counting the quantity of codes of the transform coefficients output from said coding circuit and undergone normalization and compression;

said control circuit comparing the count output from said counter and a first target value and calculating, based on a result of comparison, a value of the normalization factor corresponding to said first target value in accordance with a relation between the normalization factor and the quantity of codes;

said control circuit feeding said value of the normalization factor calculated to said normalizing circuit;

said control circuit reading the image data representative of the single scene out of said first storage while delivering said image data to said orthogonal transforming circuit; causing said first storage, said orthogonal transforming circuit, said normalizing circuit, said coding circuit and said counter to execute the orthogonal transform, normalization and compression with the one scene of image data read out of said first storage; comparing the count output from said counter and a second target value, and repeatedly calculating the value of the normalization factor to thereby repeat the normalization, compression, counting of code and calculation of the normalization factor until said count satisfies said second target value within a preselected range.

5,911,007

IMAGE PROCESSING METHOD AND APPARATUS

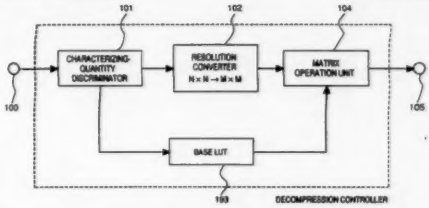
Nobutaka Miyake, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/329,408, Oct. 27, 1994, abandoned. This application Aug. 22, 1997, Appl. No. 916,922.

Claims priority, application Japan, Oct. 29, 1993, 5-272708

Int. Cl.[6] G06K *9/36;9/46*

U.S. Cl. 382—233 **10 Claims**



1. An image processing apparatus, comprising:

transforming means for orthogonally transforming image information in a first pixel block of (NXN) pixels and for generating a first coefficient block of (NXN) orthogonal transformed coefficients, N being an integer which is 2 or more;

creating means for creating a second coefficient block of (MXM) coefficients by using the first coefficient block, M being an integer which is different from N; and

transforming means for transforming the second coefficient block and for generating a second pixel block of (MXM) pixels, using a created matrix other than any of transposed orthogonal transformation matrices, the created matrix operating on the second coefficient block to suppress a distortion of the image information caused by a difference of transforming dimensions and to transform coefficient data into pixel data.

5,911,008

SCHEME FOR DETECTING SHOT BOUNDARIES IN COMPRESSED VIDEO DATA USING INTER-FRAME/INTER-FIELD PREDICTION CODING AND INTRA-FRAME/INTRA-FIELD CODING

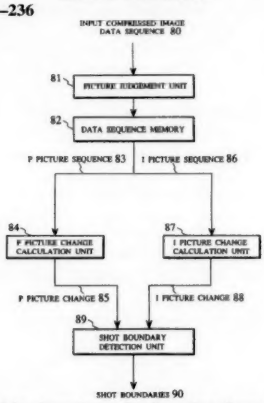
Yasuhiro Niikura, Kanagawa; Yukinobu Taniguchi, Kanagawa-ken; Akihito Akutsu, Kanagawa-ken; Yoshinobu Tonomura, Kanagawa-ken; Takashi Satoh, Kanagawa-ken; Atsushi Shimizu, Kanagawa-ken, and Hiroshi Hamada, Kanagawa-ken, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Japan

Filed Apr. 29, 1997, Appl. No. 841,200

Claims priority, application Japan, Apr. 30, 1996, P8-108858; May 30, 1996, P8-135626; May 31, 1996, P8-137331; May 31, 1996, P8-138612; May 31, 1996, P8-138613

Int. Cl.[6] **G06K** *9/36*

U.S. Cl. 382—236 **41 Claims**



1. A method for detecting a shot boundary from an input video data compressed by a coding scheme using both an inter-frame/inter-field prediction coding scheme and an intra-frame/intra-field coding scheme, comprising the steps of:

(a) calculating a Predictive-picture (P picture) change from a P picture sequence in the input video data which is compressed by an inter-frame/inter-field forward direction prediction coding scheme, according to coded data contained in the P picture sequence;

(b) calculating an Intra-picture (I picture) change from an I picture sequence in the input video data which is compressed by an intra-frame/intra-field coding scheme, according to coded data contained in the I picture sequence; and

(c) detecting a shot boundary by evaluating both the P picture change calculated at the step (a) and the I picture change calculated at the step (b).

5,911,009

METHOD AND APPARATUS FOR BINARY CODING OF IMAGE DATA INCLUDING ADDING ERROR ACCUMULATED FOR A TARGET PIXEL AND A PIXEL IN THE VICINITY TO BE LATER CODED

Kunio Ikuta, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Jan. 22, 1997, Appl. No. 787,587

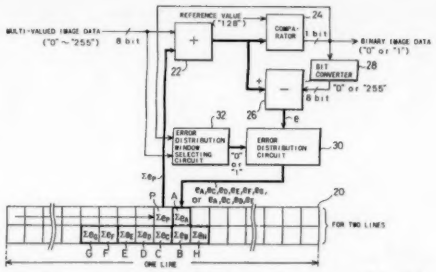
Claims priority, application Japan, Jan. 25, 1996, 8-032631; Jan. 31, 1996, 8-038903; Jan. 31, 1996, 8-038904; Mar. 25, 1996, 8-096230

Int. Cl.[6] **H04N** *1/405*

U.S. Cl. 382—237 **4 Claims**

1. A method of binary coding multi-valued image data for each pixel, said method comprising the steps of:

(a) adding first error data accumulated for a target pixel of binary coding and at least part of second error data accumulated for a specific pixel which is located in the vicinity of said target pixel and which is to be processed by binary coding after said target pixel, so as to correct the multi-valued image data;



(b) comparing the corrected multi-valued image data with a predetermined reference value and binary coding the corrected multi-valued image data based on a result of the comparison;

(c) obtaining an error that is difference between the corrected multi-valued image data and the binary-coded image data for said target pixel;

(d) distributing the error obtained for said target pixel into pixels which are to be processed by binary coding after said target pixel;

(e) accumulating the distributed errors as error data for each pixel; and

(f) repeating said steps (a) through (e) while updating said target pixel.

5,911,010

IMAGE COMMUNICATION APPARATUS AND IMAGE PROCESSING APPARATUS

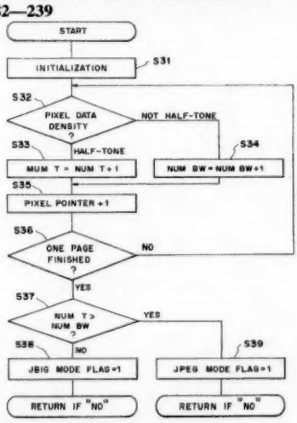
Toshifumi Nakajima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/351,057, Nov. 29, 1994, abandoned, which is a continuation of application No. 08/098,860, Jul. 29, 1993, abandoned. This application Nov. 1, 1996, Appl. No. 742,645.

Claims priority, application Japan, Jul. 30, 1992, 4-203890

Int. Cl.[6] **G06T** *9/00;* **H04N** *1/41*

U.S. Cl. 382—239 **21 Claims**



1. An image processing apparatus comprising:

manually operable means for designating a mode of said apparatus from among a plurality of modes, for each page of image data to be coded;

discrimination means for discriminating for each page of the image data, in a case where said manually operable means designates a mode in which irreversible non-hierarchical cod-

ing is available, whether it is desirable to code said page of the image data by the irreversible non-hierarchical coding, thereby obtaining a discrimination result, said discrimination means including means for detecting a ratio at which each page is occupied by half-tone image data and using the ratio in obtaining the discrimination result;

coding means for performing binary hierarchical coding and irreversible non-hierarchical coding for input image data; and

control means for controlling said coding means to perform one of said binary hierarchical coding and said irreversible non-hierarchical coding for each page of the input image data on the basis of the discrimination result from said discrimination means.

5,911,011

MULTIDIMENSIONAL CLOSE NEIGHBOR SEARCH

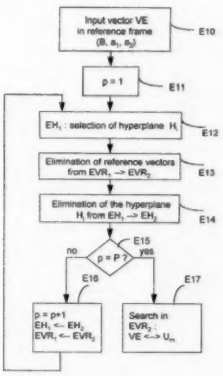
Félix Henry, Rennes, France, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1997, Appl. No. 991,775

Claims priority, application France, Feb. 28, 1997, 97 02433

Int. Cl.[6] **G06F** *17/30*

U.S. Cl. 382—253 **18 Claims**



1. A method for a multidimensional search for a close neighbor of an input vector representing physical data, amongst a first set of reference vectors stored in memory means, said method comprising the steps of:

determining, according to first rules, a first set of hyperplanes in a space containing the reference vectors;

selecting, according to second rules, a first hyperplane from the first set of hyperplanes;

forming a second set of reference vectors from the first set of reference vectors, by eliminating the reference vectors which are on the other side of the first hyperplane selected, compared with the input vector;

forming a second set of hyperplanes, by eliminating the first hyperplane from the first set of hyperplanes;

reiterating, a predetermined number of times, the selection step and the two formation steps, taking in each iteration, as the first set of reference vectors and the first set of hyperplanes, respectively, the second set of reference vectors and the second set of hyperplanes formed in the last proceeding iteration;

searching, according to third rules, for the closest neighbor of the input vector, in the second set of reference vectors.

5,911,012

METHOD FOR THE TEMPORAL FILTERING OF THE NOISE IN AN IMAGE OF A SEQUENCE OF DIGITAL IMAGES, AND DEVICE FOR CARRYING OUT THE METHOD

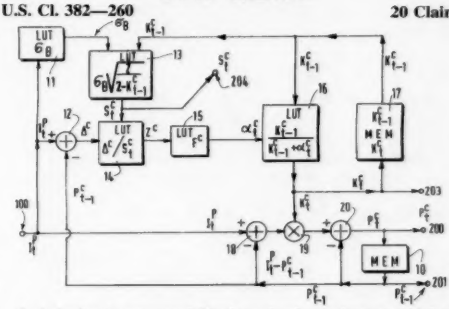
Franck Bernard, Paris, and Raoul Florent, Valenton, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 1, 1996, Appl. No. 674,061

Claims priority, application France, Jun. 30, 1995, 95 07889

Int. Cl.[6] **G06K** *9/40*

U.S. Cl. 382—260 **20 Claims**



1. A device for temporal filtering of noise in images which are part of a sequence of images, each image being in the form of a matrix of pixels, comprising:

an image processing system for supplying a noisy digitized intensity (I_t^P), referred to as a noisy present sample, of a pixel ($A_t(x,y)$) having a given location (x,y) in an image (J_t^P) at said present instant (t), and an anti-causal noisy intensity (I_{t+1}^A) of the pixel which is later than the present pixel, referred to as an anti-causal sample, of the same location (x,y) in the matrix of the later image,

a first sub-assembly, which is referred to as a causal sub-assembly, whose input receives the present noisy sample (I_t^P) and comprises linear filtering means with weights for evaluation and for delivering on one output a first filtered value, referred to as a causal filtered sample (P_t^C), of the present sample I_t^P), a filtered sample (P_{t-1}^C) of the preceding instant on another output, and a causal gain factor (K_t^C) equal to the inverse of the sum of the weights of this linear filtering on another output and,

a second sub-assembly, referred to as an anti-causal sub-assembly, an input of which receives the causal filtered sample of the preceding instant (P_{t-1}^C), a further input of which receives the present causal filtered sample (P_t^C), and another input of which receives the anti-causal noisy sample (I_{t+1}^A), and comprises linear filtering means with weights for evaluating an anti-causal integration relation with the causal gain factor (K_t^C), and for delivering on its output a second value which is referred to as a filtered anti-causal sample (P_t^A) and is the filtered sample of the noisy present sample (I_t^P).

5,911,013

CHARACTER RECOGNITION METHOD AND APPARATUS CAPABLE OF HANDLING HANDWRITING

Shinnosuke Taniishi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

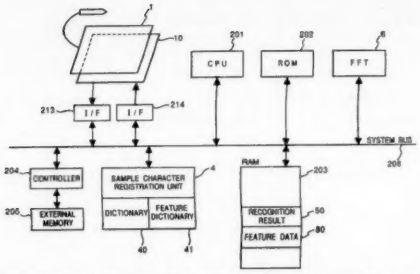
Continuation of application No. 08/427,694, Apr. 24, 1995, abandoned, which is a continuation of application No. 08/104,769, Aug. 12, 1993, abandoned. This application Jun. 4, 1997, Appl. No. 868,809.

Claims priority, application Japan, Aug. 25, 1992, 4-225956

Int. Cl.[6] **G06F** *15/332*

U.S. Cl. 382—280 **21 Claims**

1. An information processing apparatus which inputs a character pattern written by an operator and performs character recognition, comprising:



feature extraction means for extracting feature information peculiar to the operator from an input character pattern;

storage means for storing sample patterns of characters;

character recognition means for recognizing the input character pattern and for specifying a sample pattern corresponding to the input character pattern from among the sample patterns of said storage means; and

transform means for obtaining a transform function based upon the feature information extracted by said feature extraction means, the feature information being peculiar to the operator with respect to the input character pattern, and for applying the transform function to the sample pattern corresponding to the input character pattern, as specified by said character recognition means, to transform the sample pattern into a character pattern peculiar to the operator.

5,911,014

METHOD AND APPARATUS FOR EXTRACTING AN *ABNORMAL PATTERN*

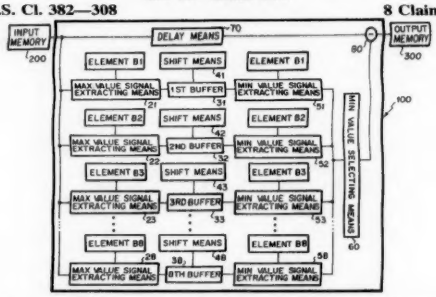
Masahiko Yamada, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Filed Aug. 26, 1997, Appl. No. 917,678

Claims priority, application Japan, Aug. 26, 1996, 8-223870

Int. Cl.[6] G06K *9/56*

U.S. Cl. 382—308 **8 Claims**



1. A method of extracting an abnormal pattern, wherein maximum value processing and minimum value processing are carried out successively on an original image signal representing an original image, which is constituted of an array of Y lines×X picture elements, by using an m-picture element, n-direction multiply structure element, and an image portion corresponding to a signal change portion, at which the original image signal fluctuates in a spatially narrower range than the size of the multiply structure element, is thereby extracted from the original image, the method comprising the steps of:

(A) carrying out operations of (1) through (7) for each of n number of structure elements constituting the n-direction multiply structure element:

(1) scanning the picture elements, which are located along a line in the array of the picture elements constituting the original image represented by the original image signal, one after another by using one of the structure elements,

(2) each time a single picture element of the original image is thus scanned, extracting a maximum value signal, which represents the maximum value of the signal values of the original image signal corresponding to the picture elements overlapping upon said structure element, and storing said maximum value signal in an intermediate memory, which is constituted of a storage space of m lines×X picture elements, said maximum value signal being stored at a picture element on an m'th line in said intermediate memory, which picture element corresponds to the picture element of the original image that is being scanned,

(3) after the scanning has been carried out for said single line in the array of the picture elements constituting the original image, shifting the maximum value signals, which have been stored along the m'th line in said intermediate memory, to an m−1'th line in said intermediate memory,

(4) successively changing the line in the array of the picture elements constituting the original image, which line is scanned, and carrying out the operations of (2) and (3) defined above until maximum value signals are stored along an intermediate line in said intermediate memory,

(5) changing the line in the array of the picture elements constituting the original image, which line is scanned, and carrying out the operation of (2) defined above, maximum value signals being thereby stored along the lines ranging from the m'th line to said intermediate line in said intermediate memory,

(6) scanning the picture elements, which are located along said intermediate line in said intermediate memory and at which the maximum value signals have been stored, one after another by using said structure element,

(7) each time a single picture element located along said intermediate line in said intermediate memory is thus scanned, extracting a minimum value signal, which represents the minimum value of the signal values of the maximum value signals stored at the picture elements overlapping upon said structure element,

(B) selecting a minimum value signal, which takes the minimum value among n number of minimum value signals having been extracted with the operations of (A) defined above by using n number of said structure elements,

(C) subtracting said selected minimum value signal from the signal value of the original image signal, which corresponds to said selected minimum value signal, and

(D) repeating the operation for shifting the line in said intermediate memory, the operation for scanning the line in the array of the picture elements constituting the original image with said structure element, the operation for storing the maximum value signals along the m'th line in said intermediate memory, the operation for scanning said intermediate line in said intermediate memory, which operations are defined in (A) above, the operation for selecting said minimum value signal, which is defined in (B) above, and the operation for the subtraction, which is defined in (C) above, while the line in the array of the picture elements constituting the original image, which line is scanned, is being changed successively and up to the Y'th line.

5,911,015

POLARIZATION-INDEPENDENT KERR MODULATOR, AND AN ALL-OPTICAL CLOCK RECOVERY CIRCUIT INCLUDING SUCH A MODULATOR

Sébastien Bigo, Palaiseau, France, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Jan. 29, 1997, Appl. No. 787,011

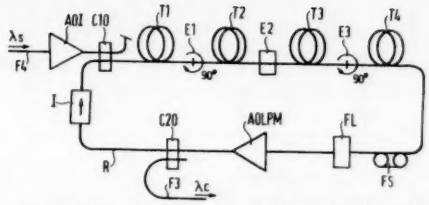
Claims priority, application France, Jan. 30, 1996, 96 01082

Int. Cl.[6] G02F *1/07*

U.S. Cl. 385—1 **15 Claims**

11. An all-optical clock recovery circuit operating by active mode locking of a fiber loop laser comprising:

said loop laser including a length of optical fiber, said loop having a signal input via a first optical coupler for injection of a first input optical signal characterized in part by a first wavelength and a signal output and a second optical coupler



constituting a clock signal output characterized in part by a second wavelength, said clock signal being extracted from said loop via the fiber, wherein said optical fiber loop comprises an even number 2i<2 of segments of polarization-maintaining fiber having two neutral propagation axes where i is an integer, said segments having equivalent optical lengths and being optically interconnected by 2i-1 splices at 2i-1 locations, said neutral propagation axes of the fiber being turned through 90° at each splice, except for an i-th splice in the middle of the loop, with the i-th splice including a mode converter, said mode'converter comprising a polarization-maintaining optical demultiplexer and a polarization-maintaining optical multiplexer, together with first and second optical paths interconnecting them to convey said first and second wavelengths, said optical paths being implemented by polarization-maintaining fiber, and wherein the neutral axes of said first path are turned through 90°, while the neutral axes of said second path are not turned.

5,911,016

POLARIZATION SCRAMBLER AND INTEGRATED OPTICAL CIRCUIT MAKING USE THEREOF

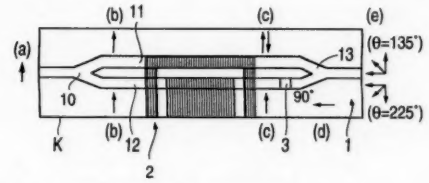
Takao Naito, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 29, 1997, Appl. No. 921,338

Claims priority, application Japan, Jan. 28, 1997, 9-014259

Int. Cl.° G02B *6/10*

U.S. Cl. 385—3 **11 Claims**



1. A polarization scrambler comprising:

a first splitter for splitting an incident signal light into two;

a first optical path which is made of a material having an electrooptical effect and through which one of the signal light split by said first splitter is propagated;

a second optical path which is made of a material having an electrooptical effect and through which the other signal light split by said first splitter is propagated;

a first voltage supplier which applies a voltage to at least one of sections set in said first optical path and said second optical path for varying a phase of a signal light propagated through the section;

a first coupler which combines signal lights propagated through said first optical path and said second optical path; and

a first plane-of-polarization rotator which rotates a polarization of the signal light in at least one of said first optical path and said second optical path between said section and said first coupler for adjusting a relative polarization angle between signal lights propagated through said first optical path and said second optical path.

5,911,017

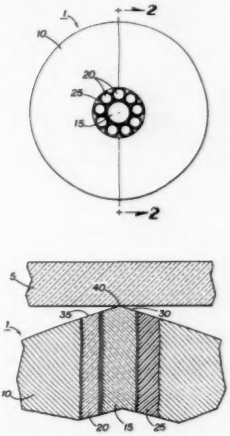
FIBER OPTIC INTERFACE FOR LASER SPECTROSCOPIC RAMAN PROBES

Michael Leonard Wach, Byron, Ga., and Gregory J. Gervasio, Wildwood, Mo., assignors to Visionex, Inc., Warner Robins, Ga.

Provisional application No. 60/023,310, Jul. 31, 1996. This application Jul. 28, 1997, Appl. No. 901,603.

Int. Cl.° G02B *6/00*

U.S. Cl. 385—12 **19 Claims**



1. A fiber optic probe assembly comprising:

an illumination fiber for transmitting light from a source to a sample;

a plurality of collection fibers, centered about and parallel to the illumination fiber, for receiving collected light;

a bonding agent for holding the illumination fiber and the collection fibers together to form a fiber bundle, the fiber bundle having a conical shape forming a refractive surface on the illumination fiber and each of the collection fibers;

a housing for enclosing the conical shaped fiber bundle; and

a window mounted in the end of the housing and in contact with a vertex of the conical shaped fiber bundle, the light from the illumination fiber being transmitted through the window into the sample, and the collected light being transmitted from the sample to the collection fibers through the window;

wherein the vertex is located on a longitudinal axis of the illumination fiber.

5,911,018

LOW LOSS OPTICAL SWITCH WITH INDUCIBLE REFRACTIVE INDEX BOUNDARY AND SPACED OUTPUT TARGET

William K. Bischel, Menlo Park; Michael J. Brinkman, Redwood City; David A.G. Deacon, Los Altos; Edward J. DeWath, Cupertino; Mark J. Dyer, San Jose, and Simon J. Field, Menlo Park, all of Calif., assignors to Gemfire Corporation, Palo Alto, Calif.

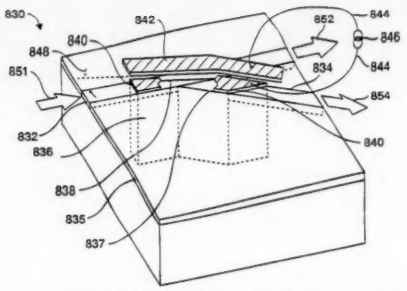
Division of application No. 08/874,847, Jun. 13, 1997, which is a division of application No. 08/614,235, Mar. 12, 1996, Pat. No. 5,664,032, which is a division of application No. 08/303,899, Sep. 9, 1994, Pat. No. 5,544,268. This application Nov. 18, 1997, Appl. No. 972,673.

Int. Cl.° G02B *6/26*

U.S. Cl. 385—16 **17 Claims**

1. An optical switch element disposed along a first waveguide segment and having first and second states, comprising:

first and second regions longitudinally-adjacent with each other in said first waveguide segment, said first and second regions defining a common boundary therebetween, said first and



second regions having an index of refraction difference which is greater when said switch element is in said first state than when said switch element is in said second state, and wherein said boundary is oriented at such an angle to said first waveguide segment as to redirect optical energy through total internal reflection when said switch element is in said first state; and

a first optical index structure spaced from said first waveguide segment and disposed and oriented to guide optical energy redirected from said first waveguide segment when said switch element is in said first state.

5,911,019

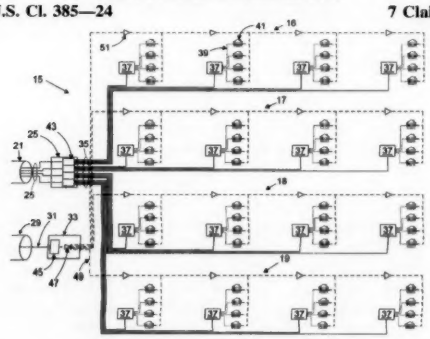
METHOD FOR UPGRADING A HYBRID FIBER COAX NETWORK TO AN ALL FIBER NETWORK

Leonard G. Cohen, Atlanta, Ga., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 4, 1997, Appl. No. 923,713

Int. Cl.[6] G02B *6/28;* **H04B** *10/20*

U.S. Cl. 385—24 **7 Claims**



1. A method for upgrading an hybrid fiber-coax cable network into an all fiber network, comprising the steps of:

replacing a first optic fiber/coaxial cable conversion device located at a remote node with an optic distribution device;

installing a house optical network unit in a living unit; and

installing a downstream optic fiber between said optic distribution device and said house optical network unit.

5,911,020

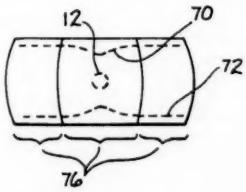
BI-PLANAR MULTIPORT ILLUMINATOR OPTIC DESIGN FOR LIGHT GUIDES

Andrew P. Riser, Capistrano Beach, and Ronald F. Mathis, Ramona, both of Calif., assignors to Remote Source Lighting International Inc., San Juan Capistrano, Calif.

Continuation-in-part of application No. 08/374,163, Jan. 17, 1995, Pat. No. 5,559,911, application No. 08/459,613, Jun. 2, 1995, Pat. No. 5,706,376, application No. 08/599,970, Feb. 14, 1996, application No. 08/645,324, May 13, 1996, application No. 08/645,325, May 13, 1996, Pat. No. 5,708,737, application No. 08/645,326, May 13, 1996, Pat. No. 5,661,828, application No. 08/645,327, May 13, 1996, Pat. No. 5,682,448, application No. 08/743,426, Nov. 1, 1996, and application No. 08/742,846, Nov. 1, 1996, abandoned. This application Jan. 31, 1997, Appl. No. 792,563.

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—33 **16 Claims**



1. An illumination system, comprising:

a first curved reflector having a generally circular perimeter generally lying in a first plane;

a second curved reflector having a generally circular perimeter generally lying in a second plane, which is substantially parallel to the first plane; and

a light source disposed between the first curved reflector and the second curved reflector.

5,911,021

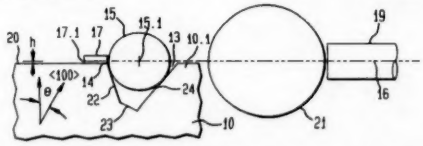
SUBASSEMBLY AND METHOD FOR COUPLING OPTICAL DEVICES

William Michael MacDonald, Lebanon, and Yiu-Huen Wong, Summit, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 2, 1997, Appl. No. 831,169

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—35 **12 Claims**



1. A subassembly for optically coupling first and second optical devices comprising

a substrate having an asymmetrical cavity located therein,

a discrete lens located in said cavity said cavity having first and second surfaces containing said lens, said first surface having a steeper slolpe than said second surface,

said first device comprising a light beam emitter disposed on said substrate so that an output beam of said emitter is received by said lens, and

said second device disposed to receive said beam as focused by said lens.

5,911,022

OPTICAL COUPLING ARRANGEMENT

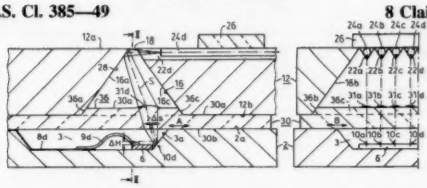
Volker Plickert, and Jörg-R. Kropp, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 31, 1997, Appl. No. 828,675

Claims priority, application Germany, Sep. 29, 1994, 44 36 204; WIPO, Sep. 26, 1995, PCTDE9501374

Int. Cl.[6] G02B *6/30*

U.S. Cl. 385—49 8 Claims



1. An optical coupling array having a first substrate with an electrooptical component, a second substrate having at least one optical fiber end and being formed with a recess open towards the underside of the second substrate and being defined by a mirror face oriented towards the optical fiber end, and a third substrate including at least one lens and being disposed between the first substrate and the second substrate, a beam path extending from the optical fiber end to the electrooptical component via the mirror face and the lens, comprising an extension formed on the third substrate and fitting form-lockingly into the opening of the recess on the underside of the second substrate, said extension having a side face forming at least one reference face cooperatable with a corresponding reference face of the second substrate for laterally positioning the third substrate and the lens relative to the second substrate, the top side of the third substrate being solidly joined to the underside of the second substrate, the underside of the third substrate being displaceable on the top side of the first substrate for laterally adjusting the lens with respect to the electrooptical component.

5,911,023

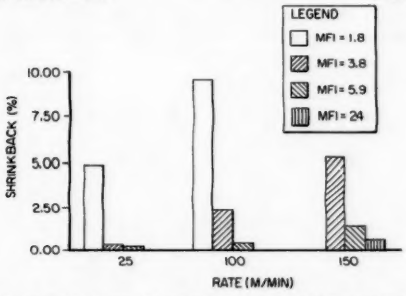
POLYOLEFIN MATERIALS SUITABLE FOR OPTICAL FIBER CABLE COMPONENTS

Brian G. Risch, and James D. Holder, both of Hickory, N.C., assignors to Alcatel Alsthom Compagnie Generale d'Electricite, Paris, France

Filed Jul. 10, 1997, Appl. No. 891,978

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—100 25 Claims



23. An optical fiber cable component extruded from a copolymer of propylene and ethylene having an MFI in the range of about 3 to 10 and having approximately 0.05 to 1 weight percent of a nucleating agent disbursed therein.

5,911,024

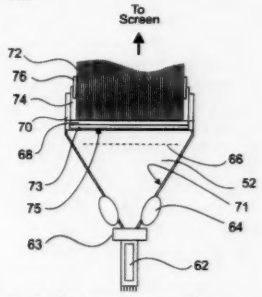
FIBER OPTIC DISPLAY SCREEN ASSEMBLY AND METHOD FOR MAKING A FIBER OPTIC SCREEN

Troy B. Wallace, P.O. Box 438, Georgetown, Me. 04548

Filed Apr. 7, 1997, Appl. No. 834,994

Int. Cl.[6] G02B *6/04*

U.S. Cl. 385—120 17 Claims



1. A fiber optic display screen, comprising:

a cathode ray tube having a face for emitting visible light in response to an electron beam impinging thereupon, said visible light comprising an image, said face being adapted to receive a predetermined number of optical coupling fibers, each of said fibers having a first end and a second end, said fibers being arranged in a predetermined order such that said image is transferred to said first ends of said optical coupling fibers;

an optical fiber laminate, said optical fiber laminate having a front surface forming a viewing screen and a rear surface, said optical fiber laminate comprising a matrix of short optical fibers, said short optical fibers being arranged in predetermined groups, each of said groups being adapted to receive at said rear surface a single one of said second ends of said optical coupling fibers and where said predetermined groups of short optical fibers comprise a central fiber surrounded radially by a predetermined number of said short optical fibers; whereby said image from said face of said CRT is transferred to said optical laminate and displayed on said viewing screen.

5,911,025

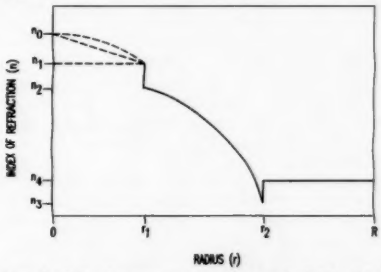
METHOD FOR THE PREPARATION OF OPTICAL FIBERS

A. F. Garito, Radnor; Rui-Fang Shi, King of Prussia; Chris Koeppen, Philadelphia, all of Pa., and Weidong Chen, Sunnyvale, Calif., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of application No. 08/696,369, Aug. 13, 1996, Pat. No. 5,729,645. This application Feb. 13, 1998, Appl. No. 23,269.

Int. Cl.[6] G02B *6/02*

U.S. Cl. 385—127 3 Claims



1. A method for the preparation of an optical fiber having an inner core with a smoothly varying or substantially uniform index of refraction; an outer core on the inner core, the outer core having

a refractive index that is lower than the refractive index of the inner core and which decreases smoothly, monotonically and non-linearly with increasing fiber radius; and a cladding layer on the outer core, the cladding layer having a substantially uniform refractive index which is greater than the refractive index of the outer core at the boundary of the outer core and the cladding layer; comprising the steps of:

forming an inner core fiber;

establishing a graded refractive index or a substantially uniform refractive index in the inner core fiber;

forming an outer core fiber by coating the inner core fiber with a composition suitable for establishing a smoothly varying graded refractive index;

establishing the smoothly varying graded refractive index in the outer core fiber;

forming a cladding layer on the outer core fiber by coating the outer core fiber with a single material or uniform mixture having a constant refractive index; and

curing the cladding layer by UV curing, thermal curing, or by cooling.

5,911,026

WEDGE-SHAPED BINDING APPARATUS FOR OPTICAL FIBER CABLE SPLICE CLOSURE

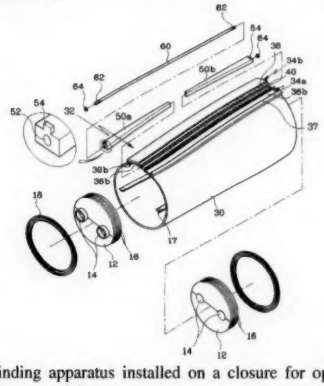
Bo Young Ahn, Incheon, and Sung Chil Jo, Kyungki-do, both of Rep. of Korea, assignors to Daewoo Telecom Ltd., Incheon, Rep. of Korea

Filed Feb. 23, 1998, Appl. No. 27,984

Claims priority, application Rep. of Korea, Feb. 21, 1997, 97-2685

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—134 **5 Claims**



1. A binding apparatus installed on a closure for optical fiber cable splice comprising:

an internal binding portion having a first groove, that narrows to the center, on the upside of an end of the closure cover cut lengthwise and a skirt cover for covering a skirt formed at the opposite end of the closure cover cut lengthwise;

an external binding portion having a second groove, that narrows to the center corresponding to the first groove, on the downside of the opposite end of the closure cover cut lengthwise, and a skirt inserted into the skirt cover of the internal binding portion;

wedge-shaped bars, inserted through both ends of holes formed by the first and second grooves when they come in contact with each other to hold both ends of the internal and external binding portions, having a clamping bar hole perforated lengthwise through the middle of the bar; and

a fixing means for fixing the wedge-shaped bars inserted into the holes formed by the first and second grooves when they come in contact with each other.

5,911,027

OPTICAL FIBRE ORGANIZER HAVING THROUGH PORT EXTENDING BETWEEN OPPOSITE FACES THEREOF

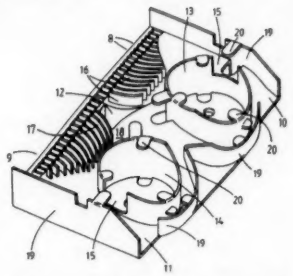
Luk Jozef Macken, Antwerp, and Lodewijk Cordula Michael Van Noten, Leuven, both of Belgium, assignors to N.V. Raychem, S.A., Kessel-Lo, Belgium

Continuation of application No. 08/605,214, filed as application No. PCT/GB94/0119940902, Sep. 2, 1994, abandoned. This application Nov. 25, 1997, Appl. No. 978,294.

Claims priority, application United Kingdom, Sep. 8, 1993, 9318654

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—135 **16 Claims**



1. An optical fibre organizer which has at one face thereof:

(a) an inlet port and an outlet port through which optical fibres can pass substantially in the plane of said face;

(b) a through port that extends through said face to an opposite face of the organizer, the through port extending from a convex portion of said face at an angle to its radius vector at said convex portion such that an optical fibre extending through the through port and over said convex portion is constrained to a minimum bend radius at least equal to its critical bend radius; and

(c) optical fibre storage means positioned with respect to the ports such that an optical fibre passing between the inlet port and the through port or between the outlet port and the through port is constrained by an outer surface of the storage means to a minimum bend radius at least equal to the critical bend radius of the optical fibre.

5,911,028

VIDEO SIGNAL AND CAMERA SIGNAL PROCESSING APPARATUS

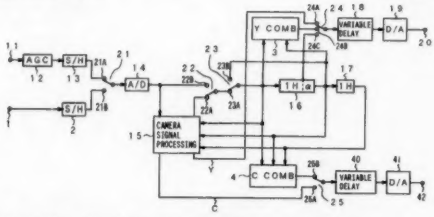
Takashi Kagawa, Kanagawa; Takao Yoshikawa, Chiba, and Takuro Enomoto, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 5, 1996, Appl. No. 583,551

Claims priority, application Japan, Jan. 10, 1995, 7-017409

Int. Cl.[6] H04N *5/94*

U.S. Cl. 386—2 **10 Claims**



1. A video signal processing apparatus, comprising:

input selecting means for selectively inputting a video signal, reproduced by video reproducing means, of which a component of a luminance signal and a component of a chroma

signal are combined or an image signal photographed by image pick-up means;

A/D converter means for digitizing the selected signal selected by said input selecting means from the video signal of which the component of the luminance signal and the component of the chroma signal are combined or the image signal photographed by the image pick-up means;

a plurality of line delay elements connected in series and adapted for delaying an output signal of said A/D converter means, wherein a first line delay element of said line delay elements has a delay amount equal to one line of data minus α, where α is substantially equal to a delay caused by an analog circuitry of said video reproducing means or of said image pick-up means;

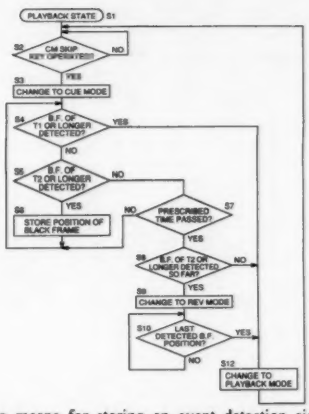
luminance signal comb filter and chroma signal comb filter means for extracting the component of the luminance signal and the component of the chroma signal from said video signal selected by said input selecting means;

camera signal processing means for processing said image signal selected by said input selecting means;

selecting means, responsive to said input selecting means, for operatively coupling said video signal digitized by said A/D converter means to said line delay elements and said image signal digitized by said A/D converter means to said line delay elements;

wherein, said luminance signal comb filter and chroma signal comb filter means extracts the luminance and chroma components based on said video signal and delayed video signals delayed by said delay elements, and said camera signal processing means processes said image signal on the basis of said image signal and delayed image signals delayed by said delay elements; and

output selecting means for selecting an output signal of said luminance signal comb filter and said chroma signal comb filter means or an output signal of said camera signal processing means.



storing means for storing an event detection signal output from said event detecting means after the first operation by said user;

comparing means for comparing the event detection signal stored in said storing means with a preset first threshold value;

second setting means for setting said recording and playback means to a standard playback mode in response to said comparing means determining that said event detection signal exceeds said first threshold value; and

means for controlling said recording and playback means such that while said recording and playback means is in the cue mode, if said event exceeding said first threshold value is not detected by said event detecting means in a predetermined second period and said event exceeding a second threshold value smaller than said first threshold value is detected, standard playback is started from a position on the recording medium at which said event exceeding said second threshold value was last detected.

5,911,029

APPARATUS FOR RECORDING AND PLAYBACK OF A TELEVISION BROADCAST SIGNAL CAPABLE OF PLAYBACK WITH COMMERCIALS SKIPPED BY A SIMPLE OPERATION

Hiroshi Sakaguchi, Amagasaki; Takao Nishiyama, Katano; Seiji Hashimoto, Daito, and Michihiro Fujiyama, Tsudukigun, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Feb. 19, 1997, Appl. No. 802,170

Claims priority, application Japan, Mar. 14, 1996, 8-057617; Oct. 24, 1996, 8-282384

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—46 **13 Claims**

1. A recording and playback apparatus, comprising:

recording and playback means for recording television broadcast signals on a recording medium and for reproducing said television broadcast signals recorded on said recording medium;

event detecting means for detecting an event included in said television broadcast signals reproduced by said recording and playback means from said recording medium;

an operating means operated by a user; and

control means, responsive to an instruction signal from said operating means, for controlling said recording and playback means;

wherein said control means comprises:

first setting means for setting said recording and playback means to a cue mode after a first operation by said user selecting a commercial skip mode key while said television broadcast signals are being reproduced;

5,911,030

VIDEO AND AUDIO EDITING SYSTEM

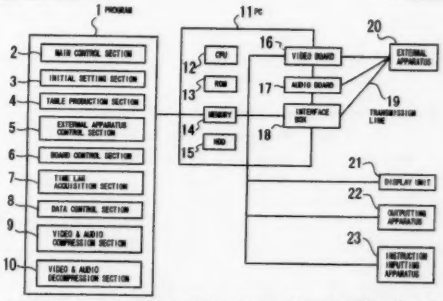
Tsuneyuki Kikuchi, Kanagawa, and Takashi Sameshima, Tokyo, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 24, 1996, Appl. No. 685,559

Claims priority, application Japan, Jul. 24, 1995, 7-186789

Int. Cl.[6] H04N *9/79*

U.S. Cl. 386—55 **9 Claims**



1. A video and audio editing system wherein video data and audio data are fetched from an external apparatus onto a computer via a video board and an audio board, respectively, and stored in a storage medium, the system comprising:

a start time table and an end time table for storing a processing start time and a processing end time, respectively, for each scene to be fetched from said external apparatus;

a time lag inputting means for inputting time lags inherent in fetching audio data from said external apparatus and placing said audio data on said audio board;

wherein said time lags result from the inherent time required between requesting said external apparatus to begin playing previously recorded data and said previously recorded data being copied and placed in said storage medium,

a table updating means for updating the contents of said start time table and said end time table based on the inputted time lags; and

a control means for referring to the contents of said start time table and said end time table to control a reading start time and a reading end time from said storage medium and reading out the audio data from said storage medium while skipping data corresponding to the time lags.

5,911,031

IC CARD MEMORY FOR RECORDING AND REPRODUCING AUDIO AND/OR VIDEO DATA CONCURRENTLY OR SEPARATELY AND A CONTROL METHOD THEREOF

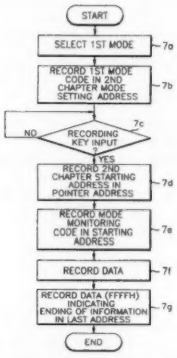
Young-Man Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Apr. 26, 1996, Appl. No. 639,949

Claims priority, application Rep. of Korea, Apr. 27, 1995, 95/10182

Int. Cl.[6] H04N *5/91;5/225*

U.S. Cl. 386—77 **6 Claims**



1. A method for recording data on an IC card memory, wherein said IC card memory comprises a mode code region for storing data for setting a recording or a playback type for at least one chapter, said method comprising the steps of:

selecting a chapter and a recording mode;

recording a code corresponding to said selected mode in the mode code region address corresponding to said selected chapter;

recording a starting address of said selected chapter in a pointer address if a recording key input is detected;

recording a mode monitoring code in said starting address;

recording at least one of audio and video data in at least one address subsequent to said starting address; and

recording an end code indicating the end of said selected chapter if data input is completed.

5,911,032

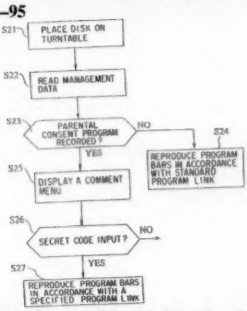
MULTI-SCENE RECORDING MEDIUM AND APPARATUS FOR REPRODUCING DATA THEREFROM

Koichi Hirayama, Yokohama; Masatoshi Nakai, Kawasaki, and Kenji Shimoda, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of application No. 08/454,289, Jun. 15, 1995, Pat. No. 5,630,006. This application Aug. 8, 1996, Appl. No. 694,428.

Int. Cl.[6] H04N *5/91;5/928*

U.S. Cl. 386—95 **16 Claims**



1. An apparatus for reproducing information from a multi-scene recording medium including a disk having a management area and a data area, said data area recording a first program information item, a second program information item following said first program information item, a third program information item following said second program information item, and a fourth program information item for replacing said second program information item, and said management area recording multi-scene configuration information indicating that said second and fourth program information items are linked to each other, data units of said second program information item and data units of said fourth program information item being alternatingly and continuously recorded on said recording medium, said apparatus comprising:

pickup means for generating signals based on information recorded on said disk;

demodulation means for generating multi-scene configuration data by demodulating signals generated by said pickup means, said multi-scene configuration data being based on said multi-scene configuration information recorded in said management area of said disk;

management data storage means for storing said multi-scene configuration data generated by said demodulation means;

menu generating means for generating, on the basis of said multi-scene configuration data, a menu advising a user to input secret key data; and

information reproducing means for reproducing a string including the first, fourth and third program information items when said secret key data is input in response to said menu, wherein said information reproducing means reproduces a string including said first, second and third program information items when said secret key data is not input in response to said menu.

5,911,033

DIGITAL VIDEO SIGNAL RECORDING APPARATUS USING VARIABLE-LENGTH CODING

Akio Fujii; Masahiko Enari, and Yoshifumi Satake, all of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/303,145, Sep. 8, 1994, abandoned, which is a continuation of application No. 07/980,654, Nov. 24, 1992, abandoned. This application Jun. 5, 1995, Appl. No. 465,603.

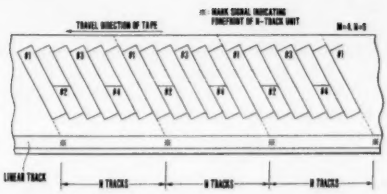
Claims priority, application Japan, Nov. 29, 1991, 3-340006; May 18, 1992, 4-125036

Int. Cl.[6] H04N *5/917;5/91*

U.S. Cl. 386—109 **20 Claims**

1. A video signal recording apparatus comprising,

a) input means for inputting a digital video signal;



b) variable-length coding means arranged to compress an amount of information of the digital video signal and to output a coded signal; and

c) recording means for recording the coded signal on a recording medium while forming many tracks in parallel on the recording medium,

wherein said variable-length coding means is arranged to adjust a compression ratio thereof in such a way as to make the coded signal corresponding to the digital video signal of m frames (m: an integer of 2 or more) have an amount of information recordable in n tracks (n: an integer of 1 or more) the coded signal corresponding to the digital video signal of each frame having a variable amount of information and each track having a fixed amount of information,

an amount of the coded signal corresponding to the digital video signal of m frame is controlled to be equal to or less than the amount of information recordable in the tracks and code groups each corresponding to the digital video signal of m frames are respectively recorded on different track groups each having n tracks, with each track group being all the time recorded with a constant number of code groups.

5,911,034
METHOD AND CIRCUIT FOR PRODUCING SYNCHRONOUS CONTROL SIGNALS IN VIDEO RECORDERS

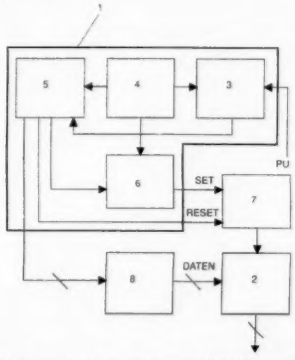
Peter Mahr, Königsfeld, and Gerhard Reiner, Villingen-Schwenningen, both of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwennigen, Germany

Filed Oct. 9, 1996, Appl. No. 648,809

Claims priority, application Germany, Nov. 2, 1995, 195 40 752

Int. Cl.[6] H04N *5/926;7/52*

U.S. Cl. 386—124 **13 Claims**



1. Method for producing synchronous digital control signals for a video recorder, in particular a digital video recorder, characterized by the following steps:

a) reception of a position pulse (PU) which is used for the definition of a time zero point (t_0) and defines a period of a head revolution,

b) calculation of all the time markers (t_1, t_2, . . .) of the control signals, which are required for the following period, and of the bit patterns, belonging to a time marker, of the control signals,

c) storage of the time markers (t_1–t_n) and of the bit patterns to be output,

d) parallel output of the corresponding bit pattern for the corresponding time marker.

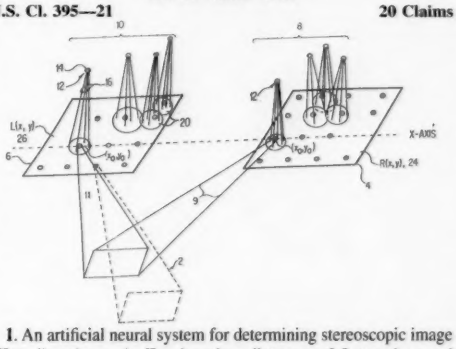
5,911,035
METHOD AND APPARATUS FOR DETERMINING BINOCULAR AFFINE DISPARITY AND AFFINE INVARIANT DISTANCE BETWEEN TWO IMAGE PATTERNS

Thomas Tsao, 12405 Venice Pl., Silver Spring, Md. 20904

Filed Apr. 12, 1995, Appl. No. 420,762

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—21 **20 Claims**



1. An artificial neural system for determining stereoscopic image affine disparity, and affine invariant distances of first and second images obtained from coupled imaging sensory device comprising:

a) adjustable HC-linear functional means for receiving intensity signals of said first and second images and providing first-view HC-representation signals and second-view HC-representation signals, and Lie derivative signals of at least one of said first- and second-views;

b) state vector increment means coupled to adjustable HC-linear functional means for receiving HC-representation signals and Lie derivative signals and providing state vector increment signals;

c) HC-pattern distance means coupled to adjustable HC-linear functional means for receiving HC-representation signals of first- and second-views and providing HC-pattern distance signal of said two images;

d) feedback circuit coupled to said state vector increment means for receiving state vector increment signals and providing adjusting signal.

5,911,036
HEAD CURSOR CONTROL INTERFACE FOR AN AUTOMATED ENDOSCOPE SYSTEM FOR OPTIMAL POSITIONING

James Wright, Santa Barbara; Hamid Wasti, Sacramento, and Darrin R. Uecker, Santa Barbara, all of Calif., assignors to Computer Motion, Inc., Goleta, Calif.

Continuation of application No. 08/529,095, Sep. 15, 1995, Pat. No. 5,825,982. This application Jul. 31, 1997, Appl. No. 904,047.

Int. Cl.[6] A61B *17/00;1/00*

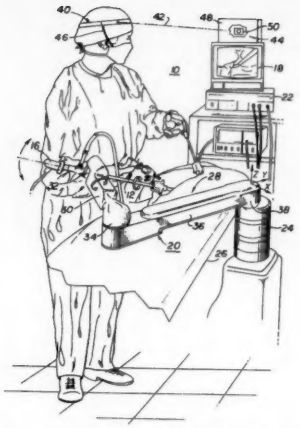
U.S. Cl. 395—94 **6 Claims**

1. A system that allows a user to control a movement of a surgical instrument, wherein the surgical instrument is coupled to a display device that displays a video image of an object, comprising:

a mechanism that moves the surgical instrument;

a graphic overlay processor which overlays a dynamic graphic cursor onto the video image;

an input device that allows the user to move said dynamic graphic cursor in a first direction;



an interface controller that provides an output signal when said dynamic graphic cursor is moved in the first direction; and,

a robot controller that receives said output signal from said interface controller and moves said mechanism so that the video image moves in the first direction.

5,911,037

MULTIPLE COPY IN A FACSIMILE SYSTEM

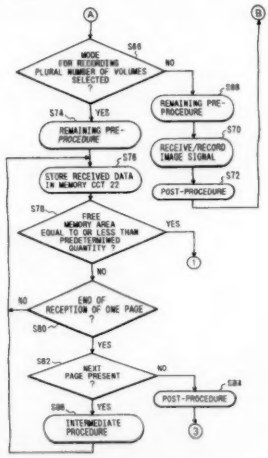
Takehiro Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/567,726, Dec. 5, 1995, abandoned, which is a continuation of application No. 08/174,465, Dec. 28, 1993, abandoned. This application Feb. 26, 1997, Appl. No. 807,806.

Claims priority, application Japan, Dec. 28, 1992, 4-348637

Int. Cl.[6] H04N *1/21*

U.S. Cl. 395—115 **68 Claims**



1. A facsimile apparatus comprising:

receiving means for receiving image data and a protocol signal for designating a first output form in which the image data is to be recorded;

recording means for recording the image data received by said receiving means on a recording paper;

storing means for storing the image data received by said receiving means;

control means for selectively, in accordance with the protocol signal received by said receiving means, causing said apparatus to operate in a first mode, for recording the image data received by said receiving means by means of said recording means, or in a second mode, for storing in said storing means the image data received by said receiving means; and

remaining-capacity detecting means for detecting a remaining-capacity of said storing means,

wherein, when said control means selects the second mode, said control means causes said recording means to record the image data stored in said storing means in either the first output form or a second output form different from the first output form in accordance with a detection result obtained by said remaining-capacity detecting means during the storage of the received image data in said storing means.

5,911,038

HIGH AVAILABILITY TELECOMMUNICATIONS SYSTEM WITH A DUAL INTERFACE FOR MIRRORED ASYNCHRONOUS PROCESSING

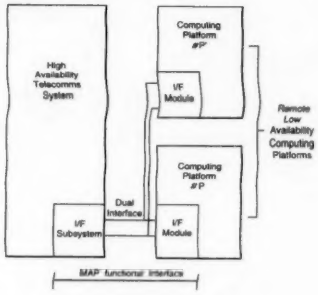
Keith Patrick Jones, Coventry, United Kingdom, assignor to GPT Limited, United Kingdom

Continuation of application No. 08/284,822, Aug. 2, 1994, abandoned. This application Feb. 10, 1997, Appl. No. 814,444.

Claims priority, application United Kingdom, Aug. 3, 1993, 9317436.5

Int. Cl.[6] H04J *3/12*

U.S. Cl. 395—180 **7 Claims**



1. A high availability telecommunications system having means for mirroring functional interface requests, said means for mirroring comprising:

a) a system interface connected to said high availability telecommunications system and to a plurality of computing platforms remote from, and connected to, said interface;

b) all of the computing platforms being each individually operative for receiving and processing all of the functional requests, each said functional request being transmitted by said interface from said high availability telecommunications system to every one of said plurality of computing platforms and for responsively generating a response from every one of said plurality of computing platforms for receipt by said interface; and

c) said interface being operative for identifying and selecting the response received first in time from the responses to said all of the functional requests transmitted by all of the computing platforms, and for forwarding the first received response to said high availability telecommunications system for system processing, and for discarding any further response.

5,911,039

INTEGRATED CIRCUIT DEVICE COMPRISING A PLURALITY OF FUNCTIONAL MODULES EACH PERFORMING PREDETERMINED FUNCTION

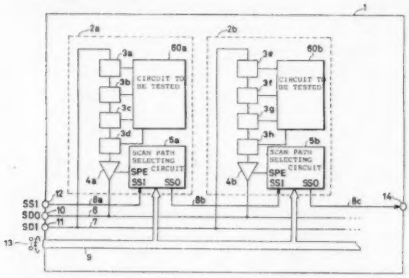
Takeshi Hashizume, and Kazuhiro Sakashita, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/218,856, Mar. 28, 1994, abandoned, which is a continuation of application No. 08/008,866, Jan. 25, 1993, which is a continuation of application No. 07/556,542, Jul. 24, 1990, abandoned. This application Jan. 27, 1997, Appl. No. 787,333.

Claims priority, application Japan, Aug. 2, 1989, 1-200632

Int. Cl.[6] G06F *11/267;11/27*

U.S. Cl. 395—183.06 19 Claims



1. An integrated circuit device for performing a predetermined function, comprising:

a plurality of functional modules each for performing a predetermined function;

means for supplying a signal for selecting a functional module to be tested out of said plurality of functional modules, only a single functional module being tested at once among said plurality of functional modules;

a single common input line means and a single common output line means for transmitting test data to said functional modules, each functional module including a test circuit belonging to a corresponding functional module for testing the test data, with each test circuit including;

scan path means for receiving said test data from said single common input line means to said functional module, said scan path means receiving a test output from said functional module and holding the test data, and outputting said test output to said single common output line means;

output controlling means for controlling the output of said test output from said scan path means to said single common output line means, each of said output controlling means being connected to said single common output line means in parallel; and

selecting signal holding means comprising a single latch for holding said selecting signal for selectively driving said output controlling means, wherein the latches of said selecting signal holding means of the respective test circuits are connected in series to another selecting signal holding means of another test circuit to constitute shift register means receiving said selecting signal from said selecting signal supplying means, and each of said single latch selects one of said scan path means;

whereby a plurality of said output controlling means from said functional modules connected to said single common output line means in parallel, said plurality of said output controlling means contention for said single common output line means upon a normal start up or test operation of said functional modules;

said integrated circuit device further comprising reset means for preventing said single common output line means contention by plurality of said output controlling means, said reset means including;

(a) means for receiving a reset signal, and supply the reset signal simultaneously to each of said output controlling means; and

(b) means responsive to said reset signal for disabling said output controlling means from outputting the test output.

5,911,040

AC CHECKPOINT RESTART TYPE FAULT TOLERANT COMPUTER SYSTEM

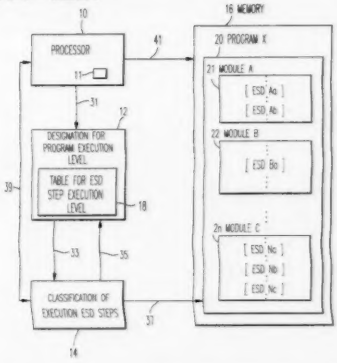
Hideaki Hirayama, Kanagawa-ken, and Takeo Takahashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of application No. 08/409,091, Mar. 23, 1995, abandoned. This application Mar. 4, 1997, Appl. No. 810,459.

Claims priority, application Japan, Mar. 30, 1994, 6-060614

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.14 6 Claims



1. A checkpoint and restart type computer system for executing a program in which at least two checkpoints are acquired and the program is restarted from a previous checkpoint acquired before an appearance of an error state, comprising:

a memory for storing the program which includes a plurality of error state detecting (ESD) sequences between the checkpoints, each of the ESD sequences containing an error state checking sequence and a designated execution level for the sequence;

a processor for executing the program and maintaining an image of the previously located checkpoint;

means for designating an execution level for the program, including a table for setting an allowed execution level for respective ESD sequences;

means for classifying the execution of the plurality of ESD sequences by comparing the designated execution level for the program and the allowed execution level for the ESD sequences; and

means for changing the execution level for the program only when a debugging operation is requested so as to increase the frequency of the execution of the ESD sequences for detecting a particular position of an error when the processor detects the ESD sequence during the execution of the program;

wherein the means for classifying controls the execution of the ESD sequence in the program to occur if the designated execution level for the program is higher than the allowed execution level for the ESD sequence.

5,911,041

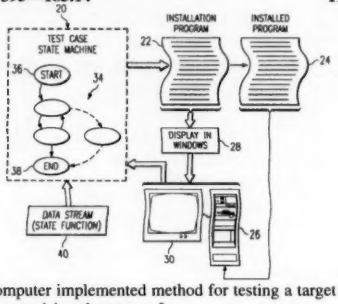
METHOD FOR GENERALIZED WINDOWS APPLICATION INSTALL TESTING FOR USE WITH AN AUTOMATED TEST TOOL

Daniel H. Schaffer, Colorado Springs, Colo., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Division of application No. 08/674,355, Jul. 1, 1996, Pat. No. 5,870,539. This application Nov. 26, 1997, Appl. No. 979,728. This patent is subject to a terminal disclaimer

Int. Cl.[6] G06F *15/60*

U.S. Cl. 395—183.14 **19 Claims**



1. A computer implemented method for testing a target software product, comprising the steps of:

providing for constructing a finite state machine in which portions of said target product are ascribed to states of said state machine;

providing for furnishing state functions, each to perform at least one verification on said target software product within a respective state of said finite state machine, wherein each of said respective states of said finite state machine corresponds to a set of program instructions of said target software program; and

providing for furnishing information to said state machine for use by said target software product portions ascribed to states of said state machine.

5,911,042

COMPUTER SYSTEM HAVING EXPANSION UNIT

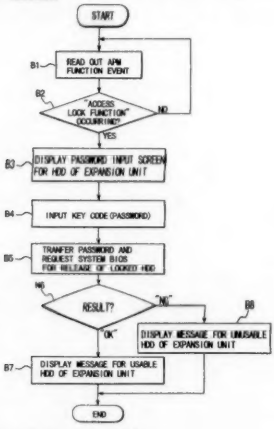
Jun Kugue, Iruma, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 28, 1997, Appl. No. 808,421

Claims priority, application Japan, Mar. 2, 1996, 8-071396

Int. Cl.[6] G06F *11/00*; **H04L** *9/00*

U.S. Cl. 395—188.01 **8 Claims**



1. A computer system comprising:

a computer; and

an expansion unit to which the computer is detachably attached in order to expand a function of the computer, wherein

said expansion unit comprises a hard disk drive, said hard disk drive having an access lock function for inhibiting an access to said hard disk drive when an input password does not coincide with a predetermined password, and

said computer comprises:

resource detection means for detecting a resource housed in said expansion unit when attachment of the computer to the expansion unit is detected, the resource including said hard disk drive;

determination means for determining whether or not said detected resource is a hard disk drive which is in an access inhibit state;

memory means, coupled to the determination means, for storing an event indicating that the hard disk drive is in an access inhibit state, and for issuing the event indicating that the hard disk drive is in an access inhibit state;

password input means for, through an operating system, displaying a guidance for prompting to input a password in response to issuance of the event indicating that the hard disk drive is in an access inhibit state from said memory means;

means for attempting releasing the access inhibit state of the hard disk drive by making the hard disk drive which is in the access inhibit state valid and by supplying the password input from said password input means to the hard disk drive which is made valid; and

resource assigning means for assigning the hard disk drive to the operating system when the access inhibit state of the hard disk drive is released.

5,911,043

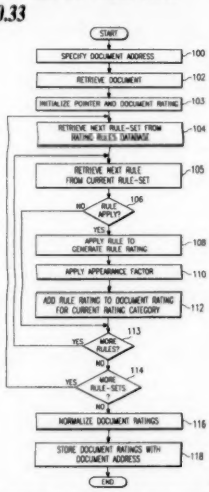
SYSTEM AND METHOD FOR COMPUTER-BASED RATING OF INFORMATION RETRIEVED FROM A COMPUTER NETWORK

Robert A. Duffy, Plano, and Lyle N. Griffin, Richardson, both of Tex., assignors to Baker & Botts, L.L.P., Dallas, Tex.

Filed Oct. 1, 1996, Appl. No. 725,342

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—200.33 ***24 Claims***



1. A system for rating information retrieved from a computer network, comprising:

a retrieve module coupled to the computer network and operable to retrieve a document from the computer network using a document address;

a rate module coupled to the retrieve module and operable to generate a document rating for the document in response to the content of the document; and

a database operable to store the document rating and the document address.

5,911,044

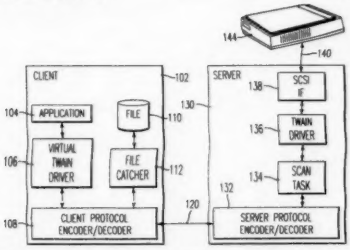
NETWORK IMAGE SCANNING SYSTEM WHICH TRANSMITS IMAGE INFORMATION FROM A SCANNER OVER A NETWORK TO A CLIENT COMPUTER

Robin Lo, Saratoga; Kanghoon Lee, Fremont; Lawrence Tremmel, Riverbank; David Stewart, San Carlos, and Iwao Max Anzai, Mountain View, all of Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, San Jose, Calif.

Provisional application No. 60/030,069, Nov. 8, 1996. This application Mar. 14, 1997, Appl. No. 818,685.

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.33 **36 Claims**



1. A method of acquiring an image and transmitting the image from a first computer to a second computer, comprising the steps of:

executing an application program by the second computer, the application program interfacing with a scanner driver of the second computer which is usable with a plurality of application programs;

indicating, using the scanner driver of the second computer, that an image is to be acquired using the application program;

transmitting a command from the second computer to the first computer over a computer network indicating that an image is to be acquired;

receiving the command by the first computer;

acquiring an image at the first computer, after the step of receiving the command by the first computer;

transmitting over the computer network the image from the first computer to the second computer; and

storing the image on a storage medium of the second computer.

5,911,045

METHOD AND SYSTEM FOR SHARING INFORMATION IN A VIRTUAL REALITY WORLD

Todd Leyba, Gaithersburg, Md., and David Allen Schell, Durham, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 24, 1997, Appl. No. 842,346

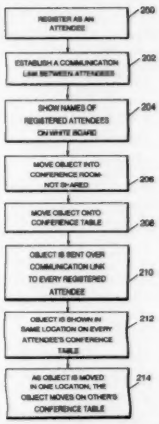
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.34 **9 Claims**

1. A method of sharing information in a computer network three dimensional virtual reality environment, comprising the steps of:

registering a plurality of users to share information over the network;

displaying three dimensional virtual reality environments to respective registered ones of the plurality of users, wherein the three dimensional virtual reality environment includes three dimensional representations of information locally available to respective registered users;


REGISTER AS AN ATTENDEE
200
ESTABLISH A COMMUNICATION LINK BETWEEN ATTENDEES
202
SHOW NAMES OF REGISTERED ATTENDEES ON WHITE BOARD
204
MOVE OBJECT INTO CONFERENCE ROOM-NOT SHARED
206
MOVE OBJECT ONTO CONFERENCE TABLE
208
OBJECT IS SENT OVER COMMUNICATION LINK TO EVERY REGISTERED ATTENDEE
210
OBJECT IS SHOWN IN SAME LOCATION ON EVERY ATTENDEE'S CONFERENCE TABLE
212
AS OBJECT IS MOVED IN ONE LOCATION, THE OBJECT MOVES ON OTHER'S CONFERENCE TABLE
214

selecting a three dimensional representation of information locally available to a first registered user for publication to other registered users;

placing the selected three dimensional representation of information locally available to the first registered user into a shared area of the environment;

transferring, responsive to the placing step, said information corresponding to the selected three dimensional representation placed into the shared area of the environment to other of said registered ones of the plurality of users in order to share said information among the registered ones of the plurality of users; and

displaying the selected three dimensional representation of information placed in the shared area of the environment in the respective three dimensional virtual reality environments of the registered users to which the information was transferred.

5,911,046

AUDIO-VIDEO DATA TRANSMISSION APPARATUS, AUDIO-VIDEO DATA TRANSMISSION SYSTEM AND AUDIO-VIDEO DATA SERVER

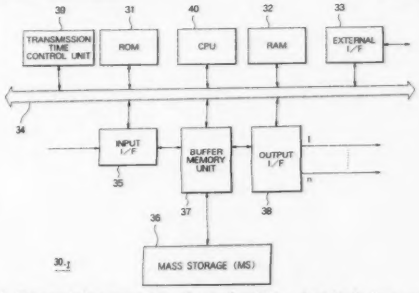
Naoki Amano, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of application No. 08/721,624, Sep. 26, 1996, Pat. No. 5,822,528. This application Aug. 14, 1998, Appl. No. 134,180.

Claims priority, application Japan, Oct. 3, 1995, 7-256088

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.47 **9 Claims**



1. Transmitting apparatus for transmitting data including audio/video data over a plurality of channels, comprising:

data storage means for storing said data;

reference time generating means for generating a signal indicating a predetermined reference time on the basis of inputting timing data;

reproducing means for reproducing the data stored in said data storage means; and

data transmitting means for transmitting the reproduced data based on a program guide received over a first channel of said plurality of channels, starting at said predetermined reference time, and for transmitting the reproduced data over another channel of said plurality of channels at predetermined intervals, said predetermined time intervals being shorter in time for said data transmitted by said data transmitting means which are closer in time to said predetermined reference time.

5,911,047

DATA TRAFFIC PROCESSING METHOD IN A SUBSCRIBER NETWORK ACCESS SUBSYSTEM OF ADVANCED COMMUNICATIONS PROCESSING SYSTEM

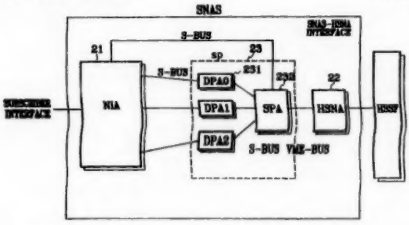
Kun-Suk Kim; Tae-Man Han, and Pyung-Dong Cho, all of *Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecom, Seoul, both of Rep. of Korea*

Filed Jul. 31, 1997, Appl. No. 903,794

Claims priority, application Rep. of Korea, Nov. 29, 1996, 96-59981

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—200.52 **10 Claims**



1. A data traffic processing method in a subscriber network access subsystem of an advanced communications processing system, comprising the steps of:

an operation process of a data processing master module comprising the steps of;

(a) initializing hardware during system booting, displaying a system logo on a screen and initializing all parameters,

(b) initializing the data processing master module to carry out a communication function with a service processing board assembly (SPA), a communication function with a slave, a network interface assembly (NIA) check function and a slave check function, and

(c) initializing the slave and informing the service processing board assembly (SPA) that a master execution preparation has been ended; and

an operation process of a data processing slave module comprising the steps of;

(d) initializing the hardware during the system booting and displaying the system logo on the screen,

(e) initializing the data processing slave module to carry out a communication function with a network interface assembly (NIA), a communication function with a master, a network interface assembly (NIA) control function and a channel transmission function, and

(f) informing the master that the slave is an alive state and initializing a protocol parameter to get ready for services.

5,911,048

SYSTEM FOR MANAGING GROUP OF COMPUTERS BY DISPLAYING RELEVANT NON-REDUNDANT MESSAGES BY EXPRESSING DATABASE OPERATIONS AND EXPERT SYSTEMS RULES TO HIGH LEVEL LANGUAGE INTERPRETER

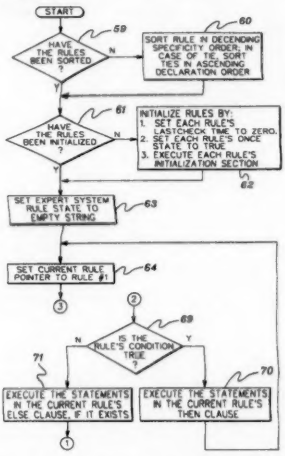
Lars Oliver Graf, 14E Circle Dr., Rensselaer, N.Y. 12144

Division of application No. 08/238,476, May 5, 1994, Pat. No. 5,619,656. This application Jan. 22, 1997, Appl. No. 787,117.

This patent is subject to a terminal disclaimer

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—200.54 **2 Claims**



1. A method for automatically managing a group of at least one managed computer comprising the steps of:

(a) executing a high-level language interpreter;

(b) expressing database operations to said high-level language interpreter; and

(c) expressing expert systems rules to said high level language interpreter

whereby complex decisions can be made with minimal consumption of processor and network resources at each individual managed computer without the assistance of a monitoring computer, where said at least one managed computer executes complex decisions comprising of:

gathering data;

analyzing the data to identify a specific computer condition;

constructing an alert message identifying said specific computer condition;

performing a set of validation tests on said alert message, said set of validating tests comprising:

querying for a duplicate alert message existing in a database in which previously posted alert messages are stored;

querying said database for an existing alert message associated a computer condition related to, and having a higher severity than, specific computer condition, prompting said alert message;

querying said database for an existing alert message associated with said specific computer condition which is being ignored; and

querying said database for a previously cleared alert message associated with said specific computer condition within a predetermined time period;

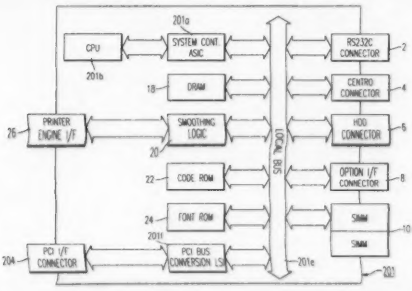
rejecting said alert message if an existing alert was found during any one test from said set of validation tests; and

displaying said alert message, when said alert message was not rejected during said validation tests, at the managed computer without inhibiting the managed computer from continuing its application processes.

5,911,049
PCI CONNECTION SYSTEM FOR A PRINTER CONTROLLER BOARD

Atsushi Watanabe, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 15, 1996, Appl. No. 679,565
Claims priority, application Japan, Jul. 21, 1995, 7-186080; Jul. 21, 1995, 7-186083; Jul. 25, 1995, 7-189612
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—280 **18 Claims**



1. A printer controller board to be connected to a computer motherboard which includes a first PCI connector connected to a PCI bus, the printer controller board comprising:

a local bus;

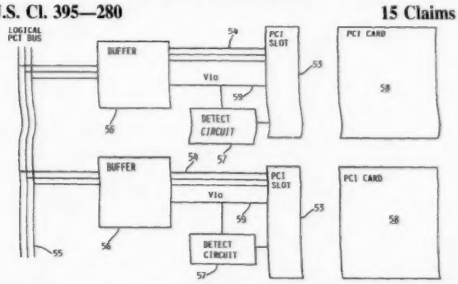
a second PCI connector to be connected to the first PCI connector of the computer motherboard; and

a PCI bus connection LSI circuit for converting input signals on the second PCI connector to a format for the local bus and for converting signals from the local bus to a format to be transmitted to the PCI bus of the computer motherboard through the first and second PCI connectors.

5,911,050
SYSTEM FOR CONNECTING EITHER OF TWO SUPPLY VOLTAGE TYPE PCI CARDS USING A COMMON CONNECTOR SOCKET

Patrick Kevin Egan, and Jan Douglas Smid, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 1, 1997, Appl. No. 886,735
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—280 **15 Claims**



1. *Apparatus for connecting a PCI logical bus to a PCI electronic* card which uses one of a first and second power supply voltages and includes an edge connector keyed by a slot at a predetermined terminal contact location to assure that the correct one of said first and second power supply voltages is supplied to the signaling voltage input (Vio) of the card comprising

a connector socket including terminal contacts and configured to receive a PCI card with an edge connector keyed to receive either of said first and second power supply voltages in accordance with the PCI standard;

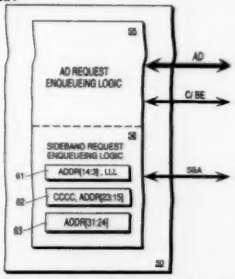
attachment means for electrically connecting said connector socket with said PCI logical bus; and

detection circuit means for sensing conditions at one of said predetermined connector socket terminal contact locations and connecting Vio to the correct one of said first and second power supply voltages.

5,911,051
HIGH-THROUGHPUT INTERCONNECT ALLOWING BUS TRANSACTIONS BASED ON PARTIAL ACCESS REQUESTS

David G. Carson, Portland, Oreg.; George R. Hayek, Cameron Park, Calif.; Brent S. Baxter, Hillsboro, Oreg.; Colyn Case, Grass Valley, Calif.; Kim A. Meinerth, Granite Bay, Calif., and Brian K. Langendorf, El Dorado Hills, Calif., assignors *to Intel Corporation, Santa Clara, Calif.*

Provisional application No. 60/014,422, Mar. 29, 1996. This application Sep. 27, 1996, Appl. No. 721,686.
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—287 **34 Claims**



1. A method of performing a bus transaction, the bus transaction including an access request for requesting a data transfer on a bus, the access request having a plurality of bits, the method comprising:

determining whether particular bits of the access request are different from corresponding bits of a previous access request; and

requesting the data transfer by transmitting only a first subset of the plurality of bits to a target based on said determining, the first subset consisting of less than all of the bits of the access request.

5,911,052
SPLIT TRANSACTION SNOOPING BUS PROTOCOL

Ashok Singhal, Redwood City; Bjorn Liencres, Palo Alto; Jeff Price, Mountain View; Frederick M. Cerauskis, Mountain View; David Broniarczyk, Mountain View; Gerald Cheung, Sunnyvale; Erik Hagersten, Palo Alto, and Nalini Agarwal, *Sunnyvale, all of Calif., assignors to Sun Microsystems, Inc.*, Mountain View, Calif.

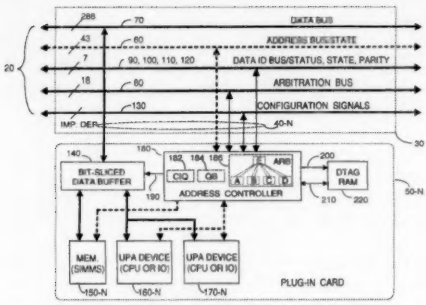
Filed Jul. 1, 1996, Appl. No. 673,967
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—293 **20 Claims**

1. For use with a computer system having at least one memory unit and at least one device able to initiate and/or respond to a transaction, each said device being associated with an address *controller, a protocol for a split transaction bus system having at* least an address bus that is snooped upon by each said device, said split transaction bus system protocol including the following steps:

providing an address bus, coupled to each said device, carrying address data associated with at least one transaction;

providing a data bus separate from said address bus, coupled to each said device, carrying transaction data associated with at least one transaction;

providing a multiplexed arbitration bus, coupled to each said *device, carrying address bus and data bus transaction requests*



for at least some of said devices, wherein for each transaction, address data is placed on said address bus in a same clock cycle with placement of a transaction request on said arbitration bus;

wherein each said device snoops on said address bus to learn whether an identified memory line is owned or shared whereupon an appropriate owned or shared signal is asserted on said bus system.

5,911,053

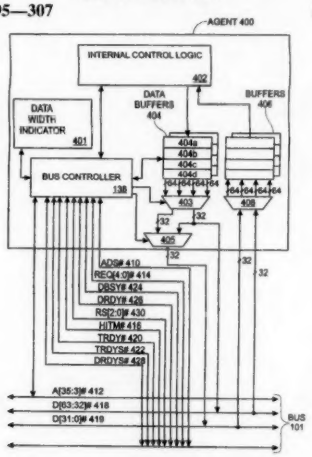
METHOD AND APPARATUS FOR CHANGING DATA TRANSFER WIDTHS IN A COMPUTER SYSTEM

Stephen S. Pawlowski, Beaverton; Peter D. MacWilliams, Aloha, and Gurbir Singh, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1996, Appl. No. 723,572

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—307 **14 Claims**



1. In a computer system, a method for determining a width of a data transfer between a first agent on a bus and a second agent on the bus, the method comprising:

(a) providing a first indication from the first agent to the second agent identifying one or more data transfer widths supported by the first agent;

(b) providing a second indication from the second agent to the first agent identifying one or more data transfer widths supported by the second agent;

(c) determining, at each of the first agent and the second agent, the width of the data transfer based, at least in part, on at least one of the first indication and the second indications; and

(d) placing at least an initial subset of data on the bus at the transfer data width negotiated between the first agent and the second agent.

5,911,054

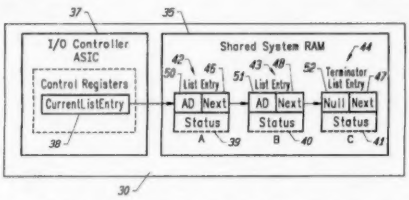
SINGLE-OPERATION LIST ENTRY UPDATE METHOD IN MIXED BUS ENVIRONMENTS

Steven J. Jahr, Granite Bay, and Patrick A. Bueb, Auburn, both of Calif., assignors to Hewlett Packaged Company, Palo Alto, Calif.

Filed Apr. 29, 1997, Appl. No. 841,247

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—307 **27 Claims**



1. A method for list insertion in mixed bus environments, comprising the steps of:

processing a list entry next field to generate a portion of said list entry next field which has a fixed value for all list entries and a portion which is variant; and

constraining all said list entries such that they all are stored within a corresponding size block of address space as addressable by said variant portion of said list entry next field.

5,911,055

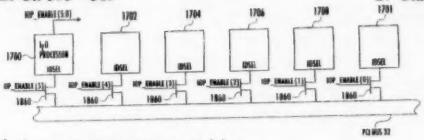
USING SUBORDINATE BUS DEVICES THAT ARE CONNECTED TO A COMMON BUS

William F. Whiteman, Cypress; Alan L. Goodrum, Tomball; B. Tod Cox; Barry S. Basile, both of Houston, and Brian T. Purcell, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 5, 1996, Appl. No. 658,634

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—309 **27 Claims**



1. A computer system, comprising:

a central processing unit;

a bus;

a first bus device having a subordinate bus indicator and being connected to communicate with the central processing unit via the bus;

a second bus device connected to the bus, the second bus device having the same hierarchical level as the first bus device, wherein the second bus device is indicated as subordinate to the first bus device in the subordinate bus indicator; and

a circuit connected to configure the second bus device based on the subordinate bus indicator to be addressable by the central processing unit, the central processing unit thereafter addressing the second bus device via the bus only by interaction with the first bus device.

5,911,056

HIGH SPEED INTERCONNECT BUS

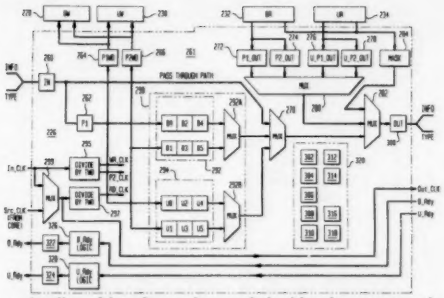
Roy R Faget, and Ronald D Larson, both of Fort Collins, Colo., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed May 1, 1997, Appl. No. 847,271

Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—309 **22 Claims**

1. A bus interconnect system, comprising:



a plurality of interface units coupled with a bus structure in a ring, each of the plurality of interface units being adapted to be coupled to a corresponding processor to provide communication signals received by the interface unit to the processor, the bus structure including a plurality of individual busses, with each one of said plurality of individual busses being coupled between a respective pair of said interface units, wherein each of said plurality of individual busses includes:

a plurality of communication lines to transfer communication signals from an upstream one of the respective pair of interface units to a downstream one of the respective pair of interface units, and

a ready signal line to transfer a ready signal from the downstream one of the respective pair of interface units to the upstream one of the respective pair of interface units, the ready signal indicating an ability of the downstream one of the respective pair of interface units to receive communication signals from the upstream one of the respective pair of interface units;

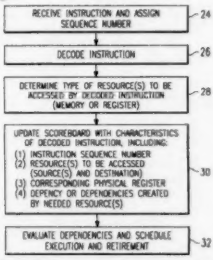
wherein each of the plurality of interface units includes a respective storage element that, in response to a clock signal, stores a ready signal received from a respective downstream interface unit before transferring the ready signal to a respective upstream interface unit.

5,911,057

SUPERSCALAR MICROPROCESSOR HAVING COMBINED REGISTER AND MEMORY RENAMING CIRCUITS, SYSTEMS, AND METHODS

Jonathan H. Shiell, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1996, Appl. No. 769,825
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—393 **26 Claims**


RECEIVE INSTRUCTION AND ASSIGN SEQUENCE NUMBER
24
DECODE INSTRUCTION
26
DETERMINE TYPE OF RESOURCE(S) TO BE ACCESSED BY DECODED INSTRUCTION (MEMORY OR REGISTER)
28
UPDATE SCOREBOARD WITH CHARACTERISTICS OF DECODED INSTRUCTION, INCLUDING:
(1) INSTRUCTION SEQUENCE NUMBER
(2) RESOURCE(S) TO BE ACCESSED (SOURCE(S) AND DESTINATION)
(3) CORRESPONDING PHYSICAL REGISTER
(4) DEPENCY OR DEPENDENCIES CREATED BY NEEDED RESOURCE(S)
30
EVALUATE DEPENDENCIES AND SCHEDULE EXECUTION AND RETIREMENT
32

1. A method of operating a processor to process a plurality of instructions, wherein each of the plurality of instructions has a respective sequence number and wherein selected ones of the plurality of instructions are for accessing a non-register memory, said method comprising for each of the selected ones of the plurality of instructions the steps of:

receiving the instruction;

decoding the instruction;

for the received instruction, storing a plurality of instruction characteristics in a table, wherein said storing step comprises at least the following steps:

storing the sequence number of the instruction;

if the received instruction accesses a non-register memory, storing an identifier of the non-register memory to be accessed by the instruction; and

if the received instruction accesses a non-register memory, corresponding the identifier of the non-register memory to a physical register;

detecting if the received instruction includes a request to access to a location in external memory;

upon detecting that the received instruction includes a read request to access a location in external memory, determining whether the external memory location identified by the request corresponds to a non-register memory identified in the table;

upon determining that the received instruction includes a read request to access a location in external memory corresponding to a non-register memory location identified in the table, reading data from the physical register corresponding to the non-register memory; and

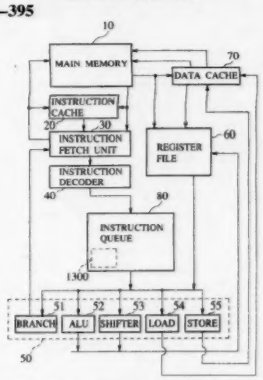
upon determining that the received instruction includes a write request to access a location in external memory corresponding to a non-register memory location identified in the table, storing a validity indicator in the table indicating that the physical register corresponding to the non-register memory location identified by the request contains invalid information and writing to the location in external memory.

5,911,058

INSTRUCTION QUEUE CAPABLE OF CHANGING THE ORDER OF READING INSTRUCTIONS

Yoshikazu Ogawa, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 22, 1997, Appl. No. 861,534
Claims priority, application Japan, May 23, 1996, 8-128560
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—395 **4 Claims**



1. An instruction queue comprising:

a dependence detector for detecting data dependence between an instruction to be written into an instruction memory and instructions presently stored in the instruction memory;

a branch instruction detector for determining whether or not the instruction to be written into the instruction memory is a branch instruction;

an order controller for referring to, if said branch instruction detector detects a branch instruction, the data dependence detected by said dependence detector, to find out instructions that are independent of the branch instruction among the instructions stored in the instruction memory, and putting the independent instructions behind the branch instruction so that the branch instruction is read out of the instruction memory before the independent instructions; and

a mask for preserving the independent instructions in the instruction memory when the contents of the instruction memory are invalidated in response to the writing of the branch instruction into the instruction memory,

wherein said order controller includes:

a dependence block for generating branch instruction dependence data that clarifies dependence of the instructions stored in the instruction memory on the branch instruction detected by said branch instruction detector, according to the branch instruction and the data dependence detected by said dependence detector; and

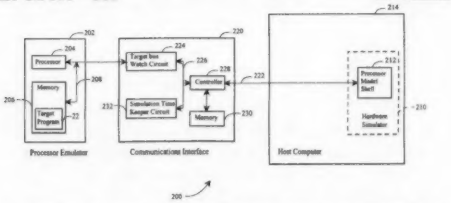
an order block for determining the order of reading instructions out of the instruction memory whenever an instruction is read out of or written into the instruction memory and storing the instruction reading order, the order block changing the instruction reading order according to the branch instruction dependence data so that the branch instruction is read out of the instruction memory before the instructions that are independent of the branch instruction.

5,911,059

METHOD AND APPARATUS FOR TESTING SOFTWARE

Jack H. Profit, Jr., Seattle, Wash., assignor to Applied Microsystems, Inc., Redmond, Wash.

Filed Dec. 18, 1996, Appl. No. 768,813
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **35 Claims**



1. A system for testing and analyzing electronic systems, including a target microprocessor and simulated target circuitry, and an associated target program to be executed on the target microprocessor, comprising:

a processor emulator employing a hardware device for emulating the target microprocessor, the processor emulator having a memory for storing a plurality of computer instructions, the computer instructions including the target program and the processor emulator communicating with the memory to receive computer instructions from the memory;

a hardware simulator adapted to simulate the target circuitry; and

a communications interface to control communication between the processor emulator and the hardware simulator, the processor emulator communicating with the hardware simulator using the communications interface when an event requires interaction of the target program with the target circuitry, the communications interface further including a synchronization circuit which synchronizes the processor emulator and the hardware simulator at a time other than when an event requires interaction of the target program with the target circuitry.

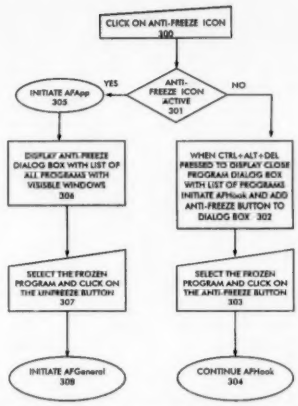
5,911,060

COMPUTER METHOD AND APPARATUS FOR UNFREEZING AN APPARENTLY FROZEN APPLICATION PROGRAM BEING EXECUTED UNDER CONTROL OF AN OPERATING SYSTEM

Scott Elliott, Beaverton, Oreg., assignor to Symantec Corporation, Cupertino, Calif.

Filed Sep. 26, 1997, Appl. No. 937,629
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **18 Claims**

1. An apparatus, operatively couplable to a data processing machine operating under control of a window type operating system, for making responsive a window function of a program operating under said operating system when said window function of said program becomes unresponsive to inputs from the keyboard and/or mouse, said operating system having previously assigned a


CLICK ON ANTI-FREEZE ICON 302
ANTI-FREEZE ICON ACTIVE 301
YES
NO
INITIATE AFApp 305
DISPLAY ANTI-FREEZE DIALOG BOX WITH LIST OF ALL PROGRAMS WITH VISIBLE WINDOWS 306
WHEN CTRL+ALT+DEL PRESSED TO DISPLAY CLOSE PROGRAM DIALOG BOX WITH LIST OF PROGRAMS INITIATE APHook AND ADD ANTI-FREEZE BUTTON TO DIALOG BOX 302
SELECT THE FROZEN PROGRAM AND CLICK ON THE UNFREEZE BUTTON 307
SELECT THE FROZEN PROGRAM AND CLICK ON THE ANTI-FREEZE BUTTON 303
INITIATE AFGeneral 309
CONTINUE APHook 304

plurality of registers, a virtual memory and a stack to said program for use by said program; said apparatus comprising:

a plurality of instruction means for instructing said data processing machine to perform operations, the plurality of instruction means including:

(a) first instruction means for instructing said data processing machine to provide an user interface for the selection of an unresponsive program;

(b) second instruction means for instructing said data processing machine after a selected program is selected by said user interface to determine whether said selected program is responsive to a message sent by said operating system to said program;

(c) third instruction means for instructing said data processing machine, when said second instruction means has determined that said selected program is responsive to said message, to determine whether said selected program has at least one disabled window and where said selected program has said at least one disabled window to enable one disabled window of said at least one disabled window; and

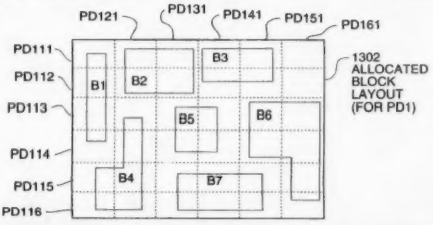
(d) fourth instruction means for instructing said data processing machine, when said second instruction means has determined that said selected program is not responsive to said message, to modify said selected program to be responsive to messages sent to said selected program from said operating system.

5,911,061

PROGRAM DATA CREATING METHOD AND APPARATUS FOR USE WITH PROGRAMMABLE DEVICES IN A LOGIC EMULATION SYSTEM

Tatsuya Tochio, Ebina; Osamu Tada, Hadano; Toshio Oguma, Ebina; Kazunobu Morimoto, Hadano, and Mototsugu Fujii, Ebina, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 6, 1996, Appl. No. 692,626
Claims priority, application Japan, Aug. 7, 1995, 7-200613
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—500.44 **15 Claims**



1. A program data creating method for use with programmable devices in a logic emulation system, comprising:

creating program data for said programmable devices by optimizing logic data defining the logic circuits of an LSI;

developing said logic circuits in said programmable devices on the basis of said program data and verifying said logic circuits at least for performance and function using said programmable devices;

wherein said logic data defining said logic circuits is divided into a plurality of unit blocks constituting a layout analogous to a floor plan represented by floor plan information regarding an LSI, and wherein said unit blocks of said logic data are allocated to at least one of said programmable devices.

5,911,062

DATA ACQUISITION METHOD AND PROTOCOL CONTROLLER CIRCUIT

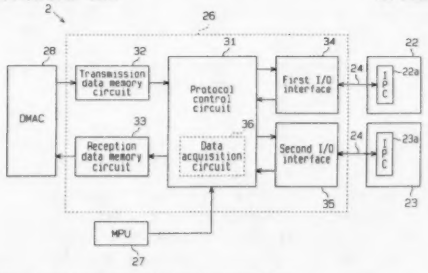
Nobuhiro Taki, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 16, 1997, Appl. No. 991,884

Claims priority, application Japan, Apr. 24, 1997, 9-107547

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—551 **28 Claims**



27. A protocol control circuit comprising:

a decoder for receiving a data signal and a strobe signal, the data signal serially transferring bits of data in accordance with a predetermined period and the strobe signal being set to alternately match and not match the bits of data of the data signal, the decoder outputting first and second coincident signals and first and second not coincident signals;

a first SR-type flip-flop connected to the decoder, wherein a set input terminal thereof receives the second coincident signal and a reset input terminal thereof receives the first coincident signal, the first flip-flop generating a dataeven signal therefrom; and

a second SR-type flip-flop connected to the decoder wherein a set input terminal thereof receives the second not coincident signal and a reset input terminal thereof receives the first not coincident signal, the second flip-flop generating a dataodd signal therefrom.

5,911,063

METHOD AND APPARATUS FOR SINGLE PHASE CLOCK DISTRIBUTION WITH MINIMAL CLOCK SKEW

David Howard Allen, and Charles Luther Johnson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

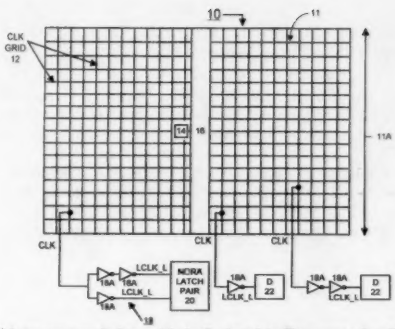
Continuation-in-part of application No. 08/676,622, Jul. 10, 1996, abandoned. This application Aug. 18, 1997, Appl. No. 914,080.

Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—555 **12 Claims**

1. An apparatus for generating and distributing a single phase clock in an integrated circuit chip comprising:

clock signal generating means for generating a single phase clock signal; said clock signal generating means including clock signal buffer means for distributing said single phase clock signal along one dimension of the integrated circuit chip;



grid means coupled to said clock signal buffer means for distributing said single phase clock signal across an integrated circuit chip;

local clock buffer means for generating a local clock copy of said single phase clock signal and for generating a local clock complement of said single phase clock signal; and

scannable latches gated by both said local clock copy and said local clock complement.

5,911,064

CLOCK MULTIPLEXER WITH SELECTION AND DESELECTION OF CLOCK MODULES

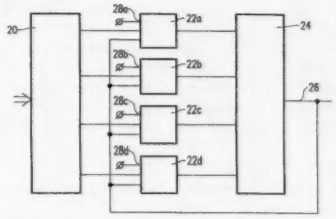
Sebastianus M. Samsom, Zoetermeer; Aloysius P. Thijssen, Pijnacker, and Keith Baker, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 11, 1997, Appl. No. 988,711

Claims priority, application European Pat. Off., Dec. 18, 1996, 96203604

Int. Cl.[6] G06F *1/06*

U.S. Cl. 395—556 **9 Claims**



1. A circuit provided with a plurality of clock modules, each of which includes

a clock input for an own clock signal,

a clock output,

a selection input for receiving a selection signal, each clock module being switchable, under the influence of the selection signal, between a selection state and a deselection state, in which states the own clock signal is passed to the clock output and not passed to the clock output, respectively, the clock module awaiting, after deselection by the selection signal, the completion of a period of the own clock signal before switching to the deselection state and the clock module switching to the selection state, after selection by the selection signal, only after a beginning of a period of the own clock signal, provided that a condition that all other clock modules be in the deselection state has been satisfied, characterized in that at least two of the clock modules are logically identical, that each of said at least two clock modules includes a hold-off input which is coupled to a common signal line, and that the clock module tests said condition by detection of a signal on the hold-off input which indicates that all clock modules are in the deselection state.

5,911,065

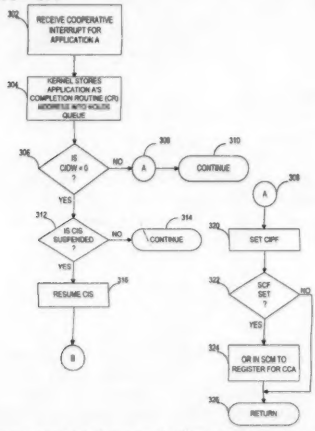
SYSTEM AND METHOD FOR PROVIDING COOPERATIVE INTERRUPTS IN A PREEMPTIVE TASK SCHEDULING ENVIRONMENT

Russell T. Williams; Kelly B. Jacklin, both of San Jose; Jeffrey L. Robbin, Sunnyvale, and John J. Iarocci, Santa Clara, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of application No. 08/435,736, May 5, 1995, abandoned. This application Aug. 5, 1997, Appl. No. 906,068.

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—677 **15 Claims**



1. In a computer-based system having a processor, a controller, a memory module, and a preemptive operating system that does not support cooperative scheduling, a method for executing within the preemptive operating system, a first application designed to operate on a cooperative scheduling operating system, comprising the steps of:

receiving a cooperative interrupt associated with the first application;

storing an address of a completion routine, associated with the first application, in a queue allocated in the memory module, said completion routine including an interrupt handling procedure for servicing said cooperative interrupt;

determining if said completion routine is permitted to execute; and

executing said completion routine under control of a cooperative interrupt server responsive to said queue, if said completion routine is permitted to execute.

5,911,066

DATA TRANSFER UTILIZING A SINGLE FUNCTIONALLY INDEPENDENT DATA TRANSFER MECHANISM

Antony S. Williams, Redmond, and Robert G. Atkinson, Woodinville, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

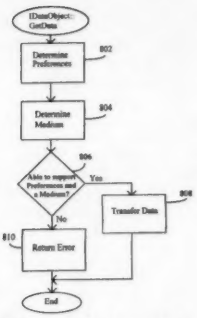
Continuation of application No. 08/199,853, Feb. 22, 1994, abandoned. This application Apr. 15, 1996, Appl. No. 632,307.

Int. Cl.[6] G06F *15/163*

U.S. Cl. 395—680 **51 Claims**

1. A method for transferring data between a source process and a destination process in a data processing system having a plurality of connection mechanisms for establishing logical connections between the source process and the destination process, the method comprising the steps of:

providing to the source process and to the destination process a uniform data transfer module for transferring the data from the source process to the destination process;



establishing a logical connection between the source process and the destination process utilizing one of the plurality of connection mechanisms; and

transferring the data from the source process to the destination process utilizing the uniform data transfer module, wherein the uniform data transfer module transfers the data in a manner that is independent of the connection mechanism used to establish the logical connection such that the uniform data transfer module operates in the same manner to transfer the data regardless of which of the plurality of connection mechanisms is used to establish the logical connection.

5,911,067

METHOD AND APPARATUS FOR IMPROVED APPLICATION PROGRAM SWITCHING ON A COMPUTER-CONTROLLED DISPLAY SYSTEM

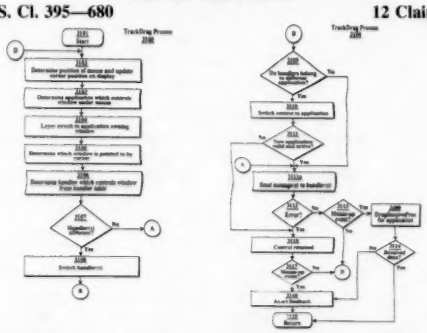
David H. Owens, Los Altos, and Stephen Fisher, Menlo Park, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of application No. 08/026,322, Mar. 3, 1993, Pat. No. 5,530,865. This application Jun. 24, 1996, Appl. No. 669,596.

This patent is subject to a terminal disclaimer

Int. Cl.[6] G06F *15/163*

U.S. Cl. 395—680 **12 Claims**



1. A method of transferring control between a first application program and a second application program in a computer-controlled display system comprising the following steps:

a. a messaging means determining that control should be switched from said first application program to said second application program;

b. said messaging means activating said second application program and issuing a message to said second application program that said second application program should activate;

c. said messaging means determining whether said second application program is valid and activated; and

d. said messaging means determining if said second application program is valid and activated then deactivating said first application program.

5,911,068

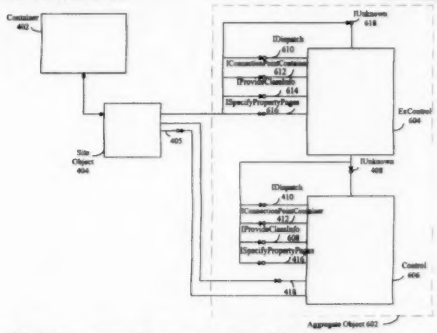
CONTAINER INDEPENDENT CONTROL ARCHITECTURE

Christopher A. Zimmerman, Bellevue, and Christopher L. Fraley, Woodinville, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of application No. 08/415,532, Mar. 30, 1995, abandoned. This application Nov. 17, 1997, Appl. No. 971,461.

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—682 **39 Claims**



16. A data processing system, comprising:

a computer display for displaying information to a user;

an input device for providing user input into the data processing system;

a plurality of aggregate controls for displaying information on the computer display and for accepting user input, each aggregate control further comprising:

a container-independent control for providing container independent functionality, wherein each aggregate control shares the control;

an extended control for providing container dependent functionality, wherein each aggregate control has its own dependent control; and

a component that receives requests to invoke functionality of the aggregate control, and that determines whether the request is to invoke functionality provided by the container-independent control or provided by the extended control and based on that determination invokes the functionality of the container-independent control or the extended control; and

a plurality of containers for storing and presenting to a user an aggregate control having an extended control with functionality that is dependent on the container.

5,911,069

EXCEPTION HANDLING TECHNIQUES FOR NATIVE METHODS BOUND TO SOM CLASSES

Patrick C. Beard, Danville, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 30, 1996, Appl. No. 724,492

Int. Cl.[6] G06F *9/40*

U.S. Cl. 395—683 **19 Claims**

1. A method for mapping exceptions which occur during a method implemented in a first programming language to exceptions that can be recognized in a second, object-oriented programming language, comprising the steps of:

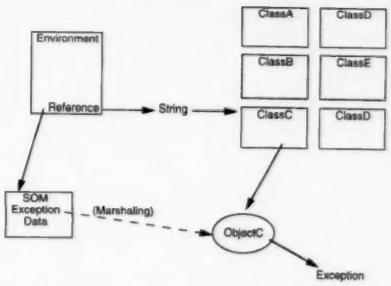
calling a method that is implemented in the first language;

generating a pointer to a data structure that is employed by methods in the first language, and passing said pointer to a method that is implemented in the first language;

determining whether said data structure contains data which indicates that an exception has occurred;

identifying a class of objects in the second language which corresponds to an exception that has occurred;

creating an instantiation of the identified class;



copying data which identifies the exception that has occurred into said instantiation; and

generating an exception in said second language from said instantiation.

5,911,070

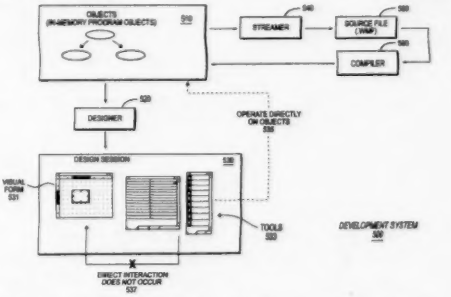
DEVELOPMENT SYSTEM WITH METHODS FOR BI-DIRECTIONAL APPLICATION PROGRAM CODE GENERATION

Randolph T. Solton, Berkeley, and Lloyd Tabb, Santa Cruz, both of Calif., assignors to Inprise Corporation, Scotts Valley, Calif.

Filed Aug. 7, 1995, Appl. No. 511,668

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—701 **30 Claims**



1. In a system for developing applications programs, said system having a processor, a memory, and a storage device, a method for generating program code for an application program, the method comprising:

(a) displaying a design surface having a form, said design surface including a plurality of types of objects which can be placed on said form to create said application program;

(b) receiving user input for visually placing desired ones of said types of objects on said form;

(c) in response to step (b), creating in-memory objects of the type desired by the user, said in-memory objects including display methods which support design-time display of said objects at said design surface and further including streaming methods which support storage of a source code representation of said objects on said storage device;

(d) in response to step (c), invoking said display methods of said in-memory objects, so that visual representation of said objects appear at said design surface;

(e) receiving user input requesting automated generation of source code for at least some of the objects that have been placed on the form; and

(f) in response to step (e), generating source code for at least some of the objects that have been placed on the form by invoking said streaming methods of at least some of said in-memory objects, so that a source code representation of

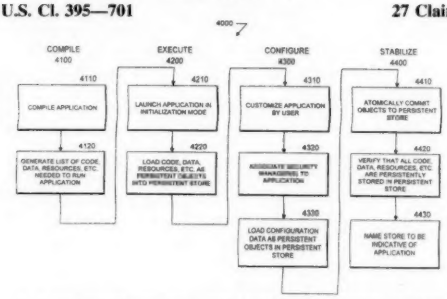
those objects is automatically generated by the system as a source file for storage on said storage device.

5,911,071

PERSISTENT PROGRAMMING SYSTEM AND METHOD FOR DEPLOYING SELF-CONTAINING EXECUTABLE APPLICATIONS

Michael J. Jordan, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Sep. 13, 1996, Appl. No. 713,391
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—701 **27 Claims**



1. A method of creating a self-contained executable application comprising the steps of:

compiling an application including main source code and initialization code to generate a list of objects needed for execution of the application;

loading the compiled source code into a single persistent store;

executing the compiled initialization code to load the listed objects as persistent objects into the persistent store; and

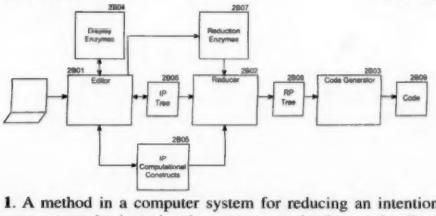
stabilizing the persistent store to create the self-contained executable application.

5,911,072

METHOD AND SYSTEM FOR REDUCING AN INTENTIONAL PROGRAM TREE REPRESENTED BY HIGH-LEVEL COMPUTATIONAL CONSTRUCTS

Charles Simonyi, Medina, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Division of application No. 08/431,049, Apr. 28, 1995, which is a continuation-in-part of application No. 08/145,689, Oct. 29, 1993, abandoned. This application Jun. 27, 1997, Appl. No. 884,443.
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—701 **28 Claims**



1. A method in a computer system for reducing an intentional program tree, the intentional program tree having a plurality of high-level computational constructs, the method comprising:

providing a reduction enzyme for each of a plurality of computational constructs, each reduction enzyme for replacing a node representing the high-level computational construct with a subtree representing an implementation of the high-level computational construct, each node of the subtree representing a low-level computational construct; and

for each of a plurality of nodes of the intentional program tree,

identifying a reduction enzyme for the high-level computational construct represented by the node from among the provided reduction enzymes; and

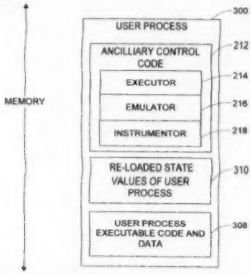
invoking the identified reduction enzyme passing a reference to the node wherein the identified reduction enzyme replaces the referenced node with a subtree in which each node represents a low-level computational construct.

5,911,073

METHOD AND APPARATUS FOR DYNAMIC PROCESS MONITORING THROUGH AN ANCILLARY CONTROL CODE SYSTEM

James S. Mattson, Jr., Campbell; Lacky V. Shah, Sunnyvale, and William B. Buzbee, Half Moon Bay, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 23, 1997, Appl. No. 996,963
Int. Cl.[6] G06F *9/445*
U.S. Cl. 395—701 **18 Claims**



1. A computer implemented method for emulating software that alters program execution at run-time, and that attaches ancillary control code to a user process loaded in computer memory comprising,

a. invoking execution for at least one code instruction from the user process loaded in the computer memory and suspending the execution of the user process;

b. loading state values for the suspended user process into the computer memory and moving the loaded state values for the user process into unoccupied areas of the memory for the user process;

c. loading ancillary control code into unoccupied areas of the memory for the user process and modifying the user process state values to execute the ancillary control code when the user process is resumed;

d. restoring the modified state values for the user process, releasing suspension of the user process, and transferring execution to the ancillary control code; and

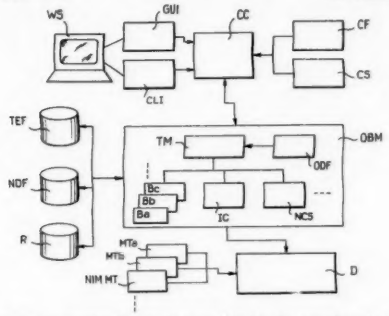
e. establishing by the ancillary control code an emulation environment that substitutes and executes at least one user process instruction by using the modified state values of the user process and by treating the user process instructions as data, and maintaining the register state values the user process would have generated without attaching the ancillary control code.

5,911,074

PROCESS FOR MANIPULATING DATA MODELS USED IN SOFTWARE ENGINEERING

Elisabeth Leprince, Paris, France; Robert Carosso, Chelmsford, Mass.; James Kiso, Acton, Mass., and Edward Strassberger, Billerica, Mass., assignors to Bull S.A., Louveciennes, France

Filed Dec. 6, 1996, Appl. No. 761,202
Claims priority, application France, Dec. 8, 1995, 95 14576
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—703 **12 Claims**



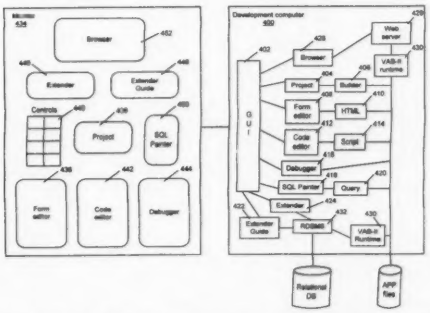
1. A process for manipulating data models for the transfer of said data models among a plurality of software engineering tools having an initial format and for the application of transformation rules to one said model, transforming the data models by means of gateways to convert the initial format of one tool into a format of another tool by passing the initial format through a unique neutral intermediate format, developing the gateways, in accordance with an object-oriented approach, in an executed language, the gateways being executable which allow the transformation of a data model in several steps, activating the steps successively, in a systematic or conditional way, using a command language which describes a logic for dynamic concatenation of the steps, concatenation being a named, parameterized procedure, each step being an executable whose code is developed from an array of reusable classes, and providing the name and the parameters of the corresponding procedure to be activated.

5,911,075

QUERY SELECTION FOR A PROGRAM DEVELOPMENT ENVIRONMENT

Howard Justin Glaser, and Mary C. Lehner, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1997, Appl. No. 828,479
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—704 **15 Claims**



1. A method of developing a computer program, comprising the steps of:

selecting an application script to be modified, wherein the application script resides on a first server:

displaying a code editor window on a monitor attached to a client, wherein the code editor is used to modify the application script and wherein the client is connected to the first server;

displaying a query list dialog box on the monitor attached to the client, wherein the query list dialog box lists one or more pre-programmed database queries and displays query commands to modify the queries or add additional queries; and

selecting one or more of the pre-programmed database queries from the query list dialog box and inserting the code for the pre-programmed database queries into the code editor window, so that the application script modified in the code editor window includes embedded database queries therein that communicate with a database on a second server that is connected to the first server.

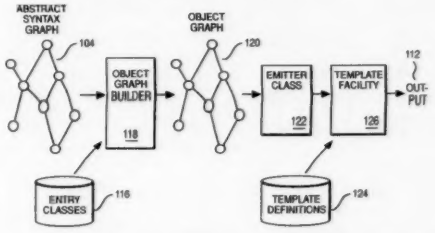
5,911,076

OBJECT ORIENTED FRAMEWORK FOR CREATING NEW EMITTERS FOR A COMPILER

Liane Elizabeth Acker, Round Rock; Michael Haden Conner, and Andrew Richard Martin, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Appl. No. 77,350
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—707 **31 Claims**

STRUCTURE OF THE SOM EMITTER FRAMEWORK



1. In an object oriented system for compiling an interface definition file to a desired output file wherein a first intermediate data structure is created, an emitter framework for translating the first intermediate data structure to the desired output file comprising:

a set of entry classes which correspond to elements in the interface definition file;

means for translating the first intermediate data structure to a second intermediate data structure, the translating means creating instances from the set of entry classes, the created instances comprising the second intermediate data structure;

an emitter class;

means for subclassing the emitter class creating an emitter subclass according to user input; and

means for creating a new instance of the emitter subclass, the new instance of the emitter subcalss translating the second intermediate data structure to the desired output file.

5,911,077

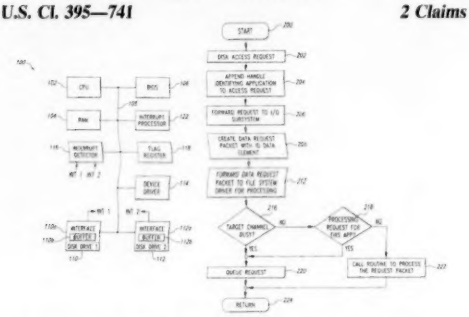
SYSTEM FOR MULTITHREADED DISK DRIVE OPERATION IN A COMPUTER SYSTEM

Eric D. Anderson, Village of North Hudson, Wis., assignor to Micron Electronics, Inc., Nampa, Id.

Continuation-in-part of application No. 08/657,601, May 31, 1996. This application Dec. 19, 1996, Appl. No. 769,424.

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—741 **2 Claims**



1. A system for simultaneous operation of multiple disk drives in a computer capable of executing first and second software programs, the system comprising:

a first disk drive responsive to disk data transfer commands from the first software program, said first disk drive having a first interrupt generating circuit to generate a first interrupt signal upon completion of said disk data transfer commands from the first software program;

a second disk drive responsive to disk data transfer commands from the second software program, said second disk drive having a second interrupt generating circuit to generate a second interrupt signal upon completion of said disk data transfer commands from the second software program;

a software control module to control operation of said first and second disk drives, said control module receiving commands from the first and second programs and generating first and second disk commands in response thereto, said first disk command including a disk transfer command from the first software program and said second disk command including a disk transfer command from the second software program, said software control generating said second disk command while said first disk drive is processing said first disk command; and

an identification data element indicating the first software program as a source software program associated with said first disk command and indicating the second software program as said source software program associated with said second disk command, said software control module using said identification data element to determine if said first and second disk drives are active and generating said second disk command while said first disk drive is processing said first disk command if said second disk drive is not active wherein a plurality of said disk transfer commands are contained within a corresponding plurality of data packets and said first disk drive command and said identification data element identifying the first application program as said source software program are contained within a first data packet and said second disk drive command and said identification data element identifying the second application program as said source software program are contained within a second data packet, said first and second data packets being non-consecutive data packets that are sequentially processed by said software control module.

5,911,078

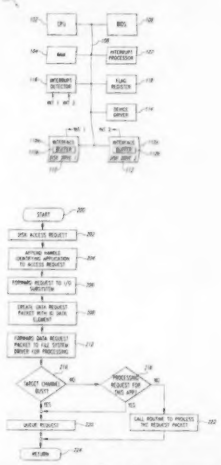
METHOD FOR MULTITHREADED DISK DRIVE OPERATION IN A COMPUTER SYSTEM

Eric D. Anderson, Village of North Hudson, Wis., assignor to Micron Electronics, Inc., Nampa, Id.

Division of application No. 08/769,424, Dec. 19, 1996, which is a continuation-in-part of application No. 08/657,601, May 31, 1996. This application Jul. 31, 1997, Appl. No. 905,889.

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—741 **3 Claims**



1. A method in a computer for simultaneous operation of first and second disk drives in a computer, the method comprising:

generating disk commands to control the first and second disk drives;

generating a plurality of data packets, each containing an identification data element indicating a disk drive associated with each of said disk commands and a computer program source of each said disk commands;

using said identification data element to identify said computer program source using the first disk drive within a first data packet to control activation of the first disk drive by generating a first disk command; and

using said identification data element to identify said computer program source using the second disk drive within a second data packet to control activation of the second disk drive by generating a second disk command if said identification data elements indicate that two of said plurality of disk commands are associated with the first and second disk drives, respectively, said first and second data packets being non-consecutive data packets that are sequentially processed.

5,911,079

COMPUTER SYSTEM HAVING A PARALLEL PORT FOR ITS PERIPHERAL DEVICE AND AN EXPANSION DEVICE THEREOF

Sung-Dong Yang, and Kwan-Ho Lee, both of Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 25, 1997, Appl. No. 840,631

Claims priority, application Rep. of Korea, Apr. 26, 1996, 96-13117; Jan. 8, 1997, 97-147 U

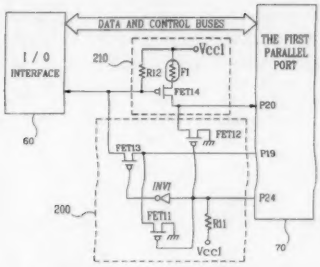
Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750.01 **12 Claims**

1. A computer system, comprising:

a portable computer;

a parallel port disposed on said portable computer, said parallel port for connection to a peripheral device and capable of delivering power to said peripheral device, wherein said par-



allel port comprises a first pin, a second pin, and a third pin, said first pin for detecting and signaling if said peripheral device is in need of power from said portable computer, said *third pin for supplying power to said peripheral device* depending on a signal from said first pin, and said second pin for signaling if no power is to be supplied to said peripheral device; *and*

a peripheral device interconnection recognizing means connected to said first pin and to said second pin of said parallel port for determining whether or not said peripheral device is in need of power via said parallel port.

5,911,080

COMPUTER SYSTEM WHOSE POWER SUPPLY IS CONTROLLED BY AN IDENTIFICATION CARD AND A METHOD OF SUPPLYING POWER TO THE COMPUTER SYSTEM

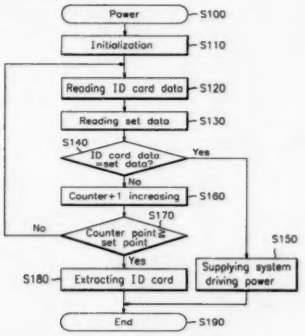
Yun-pil Yeom, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Continuation-in-part of application No. 08/534,164, Sep. 26, 1995, abandoned. This application Nov. 14, 1997, Appl. No. 970,497.

Claims priority, application Rep. of Korea, Nov. 30, 1994, 94-32147

Int. Cl.[6] G06F *1/26*

U.S. Cl. 395—750.01 **10 Claims**



1. An ID card-controlled system, comprising:

an ID card reader for outputting a signal by reading data stored in an ID card;

power-supply control section means for outputting an operation signal to allow an user to use a system controlled by the ID card, only after comparing and determining that an user ID stored in the ID card corresponds to reference data;

an auxiliary power-supply for providing power to operate said ID card reader and said power-supply control section means; and

a main power supply for supplying driving power to operate the system except the ID card reader and the power supply control section means; said driving power being variable according to the operation signal output from said power supply control section means;

wherein the power-supply control switch means directly controls the main power supply without using any device in the system.

5,911,081

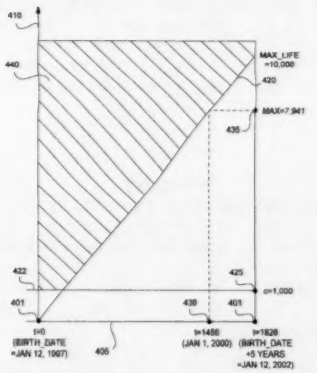
METHOD AND APPARATUS FOR SELECTIVELY INHIBITING POWER SHUTDOWNS BASED UPON THE NUMBER OF POWER SHUTDOWNS THAT AN ELECTRICAL DEVICE HAS BEEN EXPERIENCED

Terry Whatley, Nevada; Saeed Nowshadi, Fremont; Peter van der Linden, Los Altos; Robert R. Gianni, Los Gatos, and Ron Melanson, Woodside, all of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed May 5, 1997, Appl. No. 851,308

Int. Cl.[6] G06F *1/00*

U.S. Cl. 395—750.03 **18 Claims**



1. A method of controlling a power shutdown of an electrical device, comprising the steps of:

determining a value MAX indicating a maximum number of safe power-on transitions that could have been experienced by the electrical device prior to a specified date;

determining from the value MAX a threshold value P indicating a number of permissible power-on transitions prior to the specified date;

determining a value N indicating a number of power-on transitions that have been experienced by the electrical device prior to the specified date; and

inhibiting the power shutdown if the value N is greater than the threshold value P, and allowing the power shutdown otherwise.

5,911,082

PARALLEL PROCESSING BUILDING BLOCK CHIP

Midori Jean Monroe, Burnaby, Canada, and Dion Dee Messer, Austin, Tex., assignors to Audio DigitalImaging Inc., Arlington Heights, Ill.

Filed Feb. 25, 1997, Appl. No. 810,140

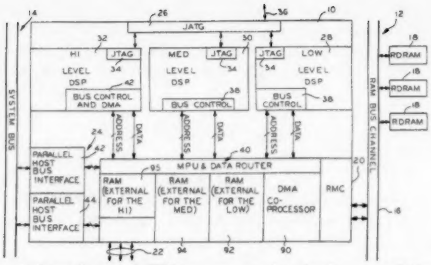
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—800.35 **26 Claims**

1. A parallel processing building block chip comprising:

a low performance digital signal processor (DSP) programmed to implement relatively low intensity processing functions and including a bus control for address and data communication;

a medium performance DSP programmed to implement relatively medium intensity processing functions and including a bus control for address and data communication;



a high performance DSP programmed to implement relatively high intensity processing functions and including a bus control for address and data communication;

a serial and parallel bus controller providing an external connection to a host system bus; and

a data router controller connected to the bus control of each of the high performance, medium performance and low performance DSP's, and to the bus controller, and including a memory interface controller for connection to an external RAM system, and routing means for controlling routing of data between any of the high, medium and low performance DSPs, the memory interface controller and the bus controller.

5,911,083

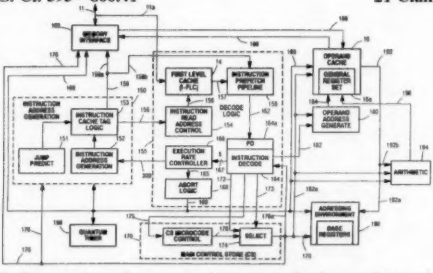
PROGRAMMABLE PROCESSOR EXECUTION RATE CONTROLLER

John Steven Kuslak, Blaine, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 27, 1996, Appl. No. 777,214

Int. Cl.[6] G06F *5/06*

U.S. Cl. 395—800.41 **21 Claims**



1. For use in a data processing system having an instruction processor capable of executing a set of machine instructions in an associated predetermined number of execution cycles, the instruction processor having decode logic for receiving and decoding the machine instructions and for providing execution control signals for each instruction, the instruction processor further having sequence logic for receiving the execution control signals and for performing the execution of each machine instruction, the execution rate control system comprising:

storage means for storing a selectable cycle-slip count for each instruction in the instruction set;

cycle-slip count modification means coupled to said storage means for receiving said selectable cycle-slip count, and for modifying said cycle-slip count by a predetermined amount during each predetermined number of execution cycles;

abort means coupled to said cycle-slip count modification means for receiving said cycle-slip count and for blocking the reception of the execution control signals by the sequence logic when said cycle-slip count is within a predetermined range of values.

5,911,084

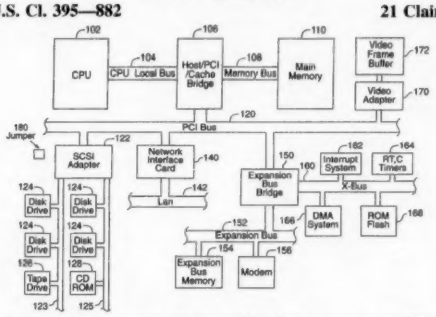
SYSTEM AND METHOD FOR ACCESSING PERIPHERAL DEVICES ON A NON-FUNCTIONAL CONTROLLER

Craig S. Jones; Victor K. Pecone, and Jay Lory, all of Austin, Tex., assignors to Dell USA, L.P., Round Rock, Tex.

Division of application No. 08/319,689, Oct. 7, 1994, Pat. No. 5,729,767. This application Feb. 17, 1998, Appl. No. 24,719.

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—882 **21 Claims**



1. A computer system which enables host access to peripheral device memories on a non-functioning bus adapter, comprising:

a CPU;

a first bus coupled to the CPU;

a bus adapter coupled to said first bus which performs a function, said bus adapter comprising:

a bus interface coupled to said first bus;

a second bus coupled to said bus interface;

a local processor coupled to said second bus;

a peripheral bus coupled to said bus interface; and

one or more peripheral device memories coupled to said peripheral bus; and

a jumper coupled to said bus interface in said bus adapter which is operable in a first position to map said one or more peripheral device memories to said bus interface wherein said one or more peripheral device memories are accessible by said CPU when said bus adapter is non-functioning, and is operable in a second position to map said one or more peripheral device memories to be accessible by said local processor comprised in said bus adapter;

wherein said CPU accesses said one or more peripheral device memories when said jumper is in said first position.

5,911,085

VARIABLE EMISSION ANGLE STROBE LIGHT AND CONTROL METHOD THEREFOR

Mitsuo Fuke, Nara; Takashi Umehara; Katsunori Kawabata, both of Osaka, and Katsumi Horinishi, Hashimoto, all of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed May 29, 1997, Appl. No. 865,013

Claims priority, application Japan, May 30, 1996, 8-136237; Sep. 25, 1996, 8-252613

Int. Cl.[6] G03B *17/24*

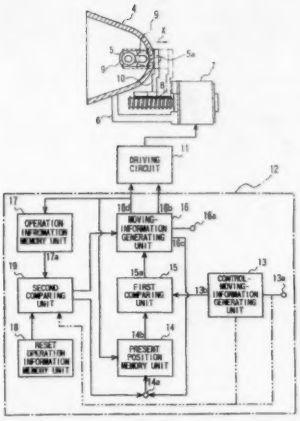
U.S. Cl. 396—62 **15 Claims**

1. A variable emission angle strobe light in which a light emission angle is varied by moving a light source in a predetermined movement range defined by a reflector to vary a position of said light source relative to said reflector, said variable emission angle strobe light comprising:

controlling means

for setting one end of the movement range as an original position by compulsively moving said light source to said one end,

for controlling an operation to move said light source to a desired control position based on said original position which is said one end, and



for compulsively moving said light source to said one end at least every time the operation to move said light source to said desired control position is performed a predetermined number of times.

5,911,086

LENS-EXCHANGEABLE CAMERA

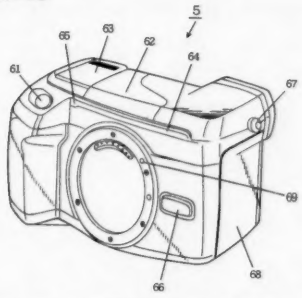
Masayuki Miyazawa, Kawachinagano; Akihiko Fujino, Sakai, both of Japan, and Sadanobu Ueda, Glen Rock, N.J., assignors to Minolta Co., Ltd., Osaka, Japan

Continuation of application No. 08/791,526, Jan. 30, 1997, Pat. No. 5,809,354. This application Jul. 14, 1998, Appl. No. 114,938.

Claims priority, application Japan, Jan. 31, 1996, 8-015795

Int. Cl.[6] G03B *3/00*

U.S. Cl. 396—96 **8 Claims**



1. A camera system including a body and a lens, said system comprising:

a photoelectric conversion circuit provided within said body for accumulating electric charge to detect a focus state of said lens;

a first control circuit provided within said body for controlling said photoelectric conversion circuit while said lens is being driven; and

a second control circuit provided within said lens for outputting to said first control circuit information regarding a lens moving rate while said photoelectric conversion circuit accumulates electric charge.

5,911,087

CAMERA FINDER SYSTEM

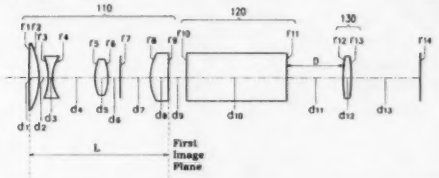
Hyoung-Won Kang, Kyeongsangnam-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Nov. 12, 1997, Appl. No. 967,905

Claims priority, application Rep. of Korea, Nov. 13, 1996, 96-53621

Int. Cl.[6] G03B *13/06*

U.S. Cl. 396—378 **6 Claims**



1. A camera finder system for observing an object and for use with a camera, the system comprising:

an objective lens system for forming a first image of the object and for magnifying the first image;

an inverting optical system for inverting the first image received from the objective optical system;

an eyepiece system for observing the inverted image received from the inverting optical system; and

wherein the following conditions are satisfied:

$$12 \leqq D \leqq 20, \text{ and}$$

$$1.0 \leqq L/D \leqq 4.5,$$

where:

D represents a distance between an exit surface of the inverting optical system and an entrance surface of the eyepiece system; and

L represents a distance between an entrance surface of the objective lens system and a first image plane.

5,911,088

CAMERA

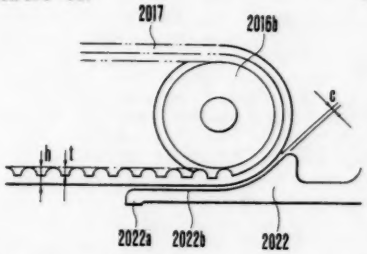
Masaki Higashihara, Kanagawa-ken, and Kenitiro Yamashita, Chiba-ken, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of application No. 08/311,892, Sep. 26, 1994, abandoned, which is a continuation of application No. 07/889,394, May 28, 1992, abandoned. This application Oct. 16, 1997, Appl. No. 951,369.

Claims priority, application Japan, May 30, 1991, 3-127625; Jun. 20, 1991, 3-148863; Jul. 11, 1991, 3-171189

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—387 **4 Claims**



1. A camera comprising:

a) a motor;

b) a camera operating mechanism arranged to be driven by a rotary output of said motor;

c) a power transmission mechanism arranged to transmit the rotary output of said motor to said camera operating mecha-

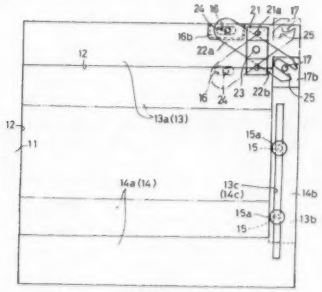
nism, said power transmission mechanism including a power transmitting belt which has a plurality of inner teeth formed on the inner side thereof and a pulley having external teeth engaging the inner teeth of said power transmitting belt, said pulley being arranged to rotate according to movement of said power transmitting belt; and

d) a disengagement preventing member disposed at a position remote from said pulley and providing a clearance between a periphery of the belt at said pulley and said disengagement preventing member that is less than a height of the inner teeth of said power transmitting belt, whereby said disengagement preventing member prevents disengagement of said pulley from said power transmitting belt during normal operation of said power transmission mechanism.

5,911,089
APERTURE SIZE CHANGING APPARATUS FOR A CAMERA

Yuji Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1997, Appl. No. 803,153
Claims priority, application Japan, Feb. 20, 1996, 8-032366
Int. Cl.[6] G03B *17/00*
U.S. Cl. 396—435 **13 Claims**



1. An aperture size changing apparatus for a camera, comprising:

a camera body;

a photographing lens mounted to said camera body;

a pair of light intercepting blades which define an aperture through which light is incident on a recording medium, said pair of light intercepting blades being movably mounted on a predetermined portion of said camera body;

an aperture size changing system that moves said pair of light intercepting blades between a standard aperture size position and a panoramic aperture size position, said aperture size changing system comprising a driving lever and a mounting member, one end of said driving lever being connected to one of said light intercepting blades, another end of said driving lever being connected to another of said light intercepting blades and said mounting member being connected to said driving lever at an intermediate position between said one end and said other end of said driving lever; and

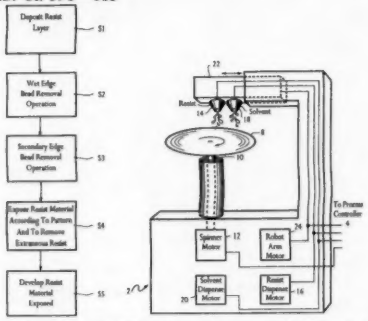
a predetermined member which is distinct from, and assembled to said camera body, said predetermined member being functionally associated with said camera body,

wherein said aperture size changing system is mounted at a predetermined location on said predetermined member so that said one end, said other end and said intermediate position are each closer to one corner of a perimeter defined by light intercepting blades than to any other corner of the perimeter, said one end, said other end and said intermediate position being within an orthogonal projection of the perimeter of said pair of light intercepting blades.

5,911,090
PROCESS AND SYSTEM FOR FLATTENING SECONDARY EDGEBEADS ON RESIST COATED WAFERS

Jonathan Alan Orth, Los Gatos, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of application No. 08/306,920, Sep. 16, 1994, Pat. No. 5,750,317. This application Dec. 12, 1997, Appl. No. 989,894.
Int. Cl.[6] G03D *5/00*
U.S. Cl. 396—611 **21 Claims**


Deposit Resist Layer
Wet Edge Bead Removal Operation
Secondary Edge Bead Removal Operation
Expose Resist Material According To Pattern And To Remove Extraneous Resist
Develop Resist Material Exposed
To Process Controller

1. A system for flattening resist mounds formed during a wet edgebead operation, the wet edgebead operation used to remove edgebeads formed when a resist material is deposited on a semiconductor wafer, the system comprising:

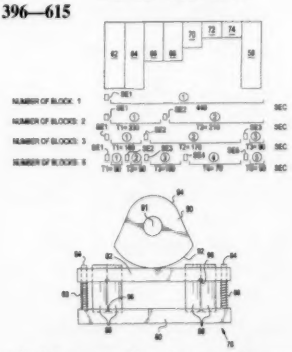
means for introducing solvent to the semiconductor wafer at an area containing the resist mounds to soften the resist mounds; and

means for spinning the semiconductor wafer at a first rate not substantially lower than approximately 3000 revolutions per minute or approximately 3000 revolutions per minute or higher, sufficient to flatten the resist mounds.

5,911,091
METHOD AND APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIALS

Nobuo Matsumoto, and Tadashi Tanaka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 14, 1995, Appl. No. 557,567
Claims priority, application Japan, Nov. 15, 1994, 6-280703; Feb. 6, 1995, 7-018136
Int. Cl.[6] G03D *3/08*
U.S. Cl. 396—615 **33 Claims**



1. A method for processing photosensitive materials in which photosensitive materials are conveyed along a serial conveyance passage while guiding the photosensitive materials on both sides thereof by using pairs of guide members to successively perform development processing steps, comprising:

dividing the conveyance passage into a plurality of blocks wherein a spacing distance between the pair of guide members on the conveyance passage is changeable in each of the divided blocks; and

changing the spacing distance between the pair of guide members in at least one of the blocks, when a photosensitive material having a different widthwise dimension is introduced into the conveyance passage, in accordance with the widthwise dimension of the photosensitive material, before introducing a forward end of the photosensitive material having the different widthwise dimension into said at least one of the blocks with fixed phase differences between the spacing distance state of the guide members in successive blocks.

5,911,092

IMAGE FORMING APPARATUS

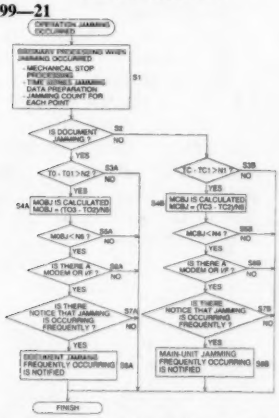
Ikuya Hotta; Masaru Ushio; Junji Sato, and Yoshinao Kitahara, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 22, 1997, Appl. No. 995,372

Claims priority, application Japan, Dec. 27, 1996, 8-350257

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—21 **8 Claims**



1. An apparatus for forming an image on a recording sheet, comprising:

an image forming unit for conveying recording sheets and for forming an image on the recording sheets based on image information;

a counter for counting a sheet number of conveyed recording sheets and for memorizing a total sheet number of conveyed recording sheets;

a detector for detecting a jam occurrence in the image forming unit and for outputting jam occurrence data indicating a date of jam occurrence and a total sheet number when the jam occurrence was detected;

a jam data holder for storing a predetermined number of the jam occurrence data arranged in time sequence, whereby when the jam data holder receives a newest one of the jam occurrence data, the jam data holder adds the newest jam occurrence data into the predetermined number of jam occurrence data and selectively eliminates an oldest one of the jam occurrence data from the predetermined number of jam occurrence data;

a calculator for calculating jam occurrence frequency when the jam data holder receives the newest jam occurrence data, wherein the calculator references the jam occurrence data from the predetermined number of jam occurrence data stored in the jam data holder, calculates a number N of jam occurrences, a total sheet number **T1** when the oldest jam occurrence was detected and a total sheet number **T2** when the newest jam occurrence was detected, and calculates a jam occurrence frequency based on a difference between the total sheet number **T2** and the total sheet number **T1** and the number N of jam occurrence; and

a signal generator for outputting a jam frequently-occurring signal when the number N of jam occurrence is larger than a first predetermined number and the jam occurrence frequency is larger than a second predetermined number.

5,911,093

MULTI-COLOR IMAGE FORMING APPARATUS CAPABLE OF PREVENTING CONTAMINATION OF RE-CHARGER

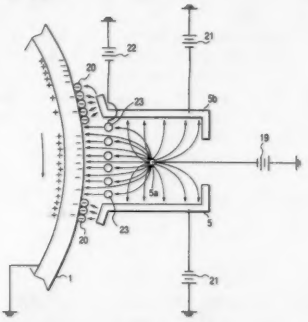
Keishi Ohsawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1997, Appl. No. 995,197

Claims priority, application Japan, Dec. 24, 1996, 8-355648

Int. Cl.[6] G03G *15/02;15/01*

U.S. Cl. 399—50 **5 Claims**



1. An image forming apparatus comprising:

a photosensitive member;

a first developing means for developing an electrostatic image on said photosensitive member;

a charge means for charging said photosensitive member bearing a first developed image formed by said first developing means, wherein said charge means includes a discharge electrode member and a shield member surrounding said discharge electrode member;

an exposure means for image-exposing said photosensitive member charged by said charge means;

a second developing means for developing an electrostatic image formed by exposure of said exposure means; and

a voltage apply means for applying voltage having the same polarity as that of the first developed image to said shield member, wherein said voltage apply means applies voltage more than potential of the first developed image.

5,911,094

FIXING DEVICE AND IMAGE FORMING APPARATUSE USING THE SAME

Takahiko Tsujimoto, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Sep. 16, 1997, Appl. No. 931,160

Claims priority, application Japan, Sep. 17, 1996, 8-244498

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—69 **38 Claims**

1. An image forming apparatus, comprising:

a fixing roller formed of a conductive member;

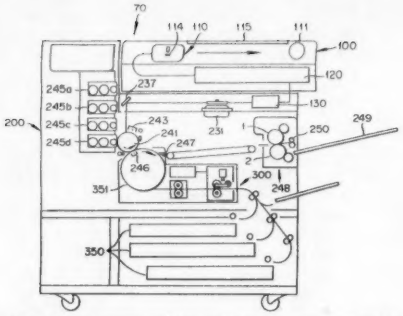
a core passing the interior of said fixing roller;

an induction coil wound around said core;

a power source part which supplies a low frequency alternating current to said induction coil;

a switching circuit which passes or breaks the low frequency alternating current supplied from said power source part to said induction coil;

a detector which detects the amount of the low frequency alternating current supplied from said power source part to said induction coil;



a temperature sensor which detects the temperature of said fixing roller; and

a controller which controls said switching circuit so as to supply the low frequency alternating current to said induction coil until the amount of the low frequency alternating current detected by said detector reaches a prescribed amount and, after the amount of the low frequency alternating current detected by said detector has reached said prescribed amount, controls said switching circuit so as to pass or break the low frequency alternating current to said induction coil based on the temperature detected by said temperature sensor.

5,911,095

IMAGE FORMING APPARATUS MANAGEMENT SYSTEM WHICH MANAGES NUMBER OF IMAGE FORMATIONS PERFORMED BY AN IMAGE FORMING APPARATUS ON A USER BASIS

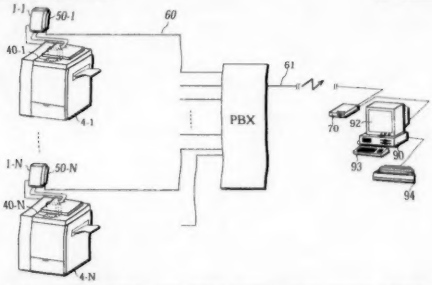
Tomoyuki Atsumi, Toyohashi; Tomokazu Kato; Hidenobu Nakamura, both of Toyokawa, and Hiroyuki Asai, Okazaki, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 3, 1997, Appl. No. 962,663

Claims priority, application Japan, Nov. 7, 1996, 8-295141

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—80 **27 Claims**



1. An image forming apparatus management system composed of an image forming apparatus and a central accumulating apparatus which is connected to the image forming apparatus by a communication line,

the image forming apparatus comprising:

an identification code reception unit for receiving at least one identification code that identifies a user;

a counting unit for counting a number of image formations for each identification code;

a first storage unit for storing each identification code received by the identification code reception unit associated with the number of image formations counted by the counting unit;

a transmission unit for transmitting at least part of the identification codes and associated numbers of image formations stored in the first storage unit to the central accumulating apparatus via the communication line when a number of identification codes in the first storage unit reaches a predetermined number; and

a storage clearing unit for clearing the first storage unit of the identification codes and associated numbers of image formations that have been transmitted by the transmission unit,

and the central accumulating apparatus comprising:

a reception unit for receiving the identification codes and associated numbers of image formations transmitted from the image forming apparatus; and

an accumulating unit for accumulating and storing data of the number of image formations for each user, in accordance with the identification codes and associated numbers of image formations received by the reception unit.

5,911,096

IMAGE FORMING APPARATUS ON WHICH A PROCESS CARTRIDGE IS DETACHABLY MOUNTED AND A PROCESS CARTRIDGE DETACHABLY MOUNTABLE TO A MAIN BODY OF AN IMAGE FORMING APPARATUS INCLUDING A GRIP PORTION

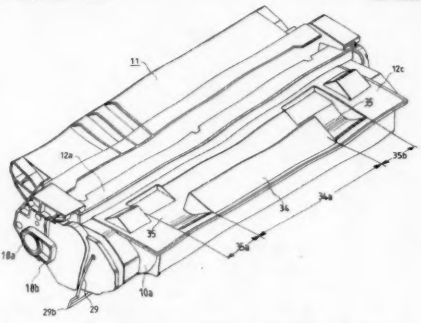
Yoshiyuki Batori, and Minoru Sato, both of Toride, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1998, Appl. No. 24,262

Claims priority, application Japan, Feb. 17, 1997, 9-048493

Int. Cl.[6] G03G *21/16*

U.S. Cl. 399—111 **18 Claims**



1. A process cartridge detachably mountable to a main body of an electrophotographic image forming apparatus, comprising:

(a) an electrophotographic photosensitive member;

(b) process means acting on said electrophotographic photosensitive member;

(c) a cartridge frame;

(d) a grip portion to be gripped when the process cartridge is mounted to and dismounted from the main body of the electrophotographic image forming apparatus;

(e) a first concave portion provided on said cartridge frame at one side of said grip portion in a longitudinal direction of said cartridge frame and being concave toward the interior of the process cartridge; and

(f) a second concave portion provided on said cartridge frame at the other side of said grip portion opposite to said one side in the longitudinal direction of said cartridge frame and being concave toward the interior of the process cartridge.

5,911,097

IMAGE FORMING APPARATUS AND METHOD USING CHARGE CONTROL MEANS

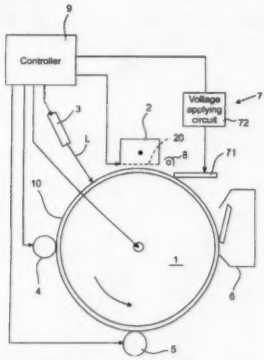
Masayasu Haga, Toyokawa; Tsugihito Yoshiyama, Toyohashi; Yasuhiro Nakagami, Toyokawa; Masami Matsuura, Toyohashi, and Akira Hirota, Okazaki, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Mar. 17, 1998, Appl. No. 42,670

Claims priority, application Japan, Mar. 18, 1997, 9-064016; Mar. 25, 1997, 9-071502; Mar. 27, 1997, 9-076276

Int. Cl.[6] G03G *15/02;21/00*

U.S. Cl. 399—174 **23 Claims**



1. An image forming apparatus, comprising:

an image bearing member having a surface;

electrifying means for electrifying the surface of said image bearing member;

latent image forming means for forming an electrostatic latent image on the surface of said image bearing member electrified by said electrifying means;

development means for visualizing the electrostatic latent image formed by said latent image forming means;

transfer means for transferring the image visualized by said development means;

charging means for imparting charge to the surface of said image bearing member in a position behind said transfer means and before said electrifying means; and

charge control means for controlling an applied voltage to said charging means so that a surface potential at said image bearing member does not exceed predetermined potential.

5,911,098

DEVELOPMENT APPARATUS AND METHOD USING SELECTIVELY APPLIED AC VOLTAGES

Eiji Gyotoku, Itami, and Tamotsu Shimizu, Settsu, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jan. 27, 1998, Appl. No. 14,396

Claims priority, application Japan, Jan. 28, 1997, 9-013754; Jan. 28, 1997, 9-013755; Feb. 20, 1997, 9-035430

Int. Cl.[6] G03G *15/08;15/09*

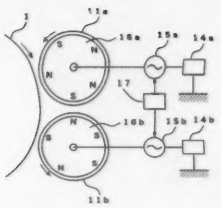
U.S. Cl. 399—264 **16 Claims**

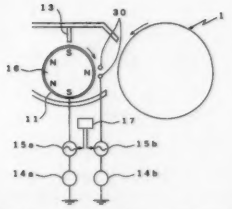
1. A development apparatus comprising:

a first developer carrier member opposing an image bearing member across a development region;

a second developer carrier member adjoining the first developer carrier member and opposing the image bearing member across the development region, wherein a common developer is supplied to the image bearing member by both the first and second developer carrier members; and

an AC voltage applying device for selectively applying AC voltages to the first developer carrier member and the second





developer carrier member, the AC voltage applying device controlled so as not to apply the AC voltage to the second developer carrier member when applying the AC voltage to the first developer carrier member.

5,911,099

ELECTROCONDUCTIIVE MEMBER AND ELECTROPHOTOGRPAHIC APPARATUS

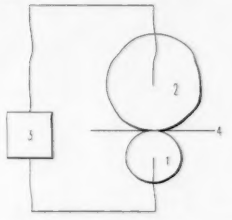
Tadashi Nakajima, Tokyo; Junji Sakata, Fujisawa, and Takahiro Kawagoe, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 29, 1997, Appl. No. 960,313

Claims priority, application Japan, Dec. 16, 1996, 8-335394; *May 28, 1997, 9-138321*

Int. Cl.[6] G03G *15/06;15/14*

U.S. Cl. 399—286 **12 Claims**



1. An electroconductive member which comprises a polyurethane as a matrix and a quaternary ammonium salt of a carboxylic acid added thereto.

5,911,100

IMAGE FORMING APPARATUS HAVING TRANSFER DRUM WITH PEELING MEMBER

Takashi Hasegawa, Ageo; Yoichi Kimura, Kawaguchi, and Satoshi Tamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/408,280, Mar. 22, 1995, abandoned. This application Feb. 4, 1997, Appl. No. 795,722.

Claims priority, application Japan, Mar. 25, 1994, 6-055731

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—303 **11 Claims**

1. An image forming apparatus, comprising:

a movable member for bearing and conveying a recording sheet, the recording sheet having a first surface bearing a non-fixed image and a second surface opposite to the first surface;

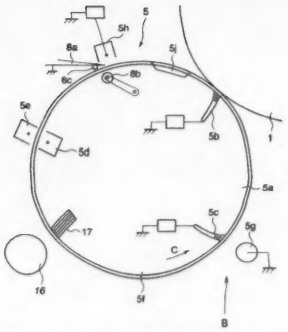


image forming means for forming an image onto the recording sheet born on said movable member; and

separation means for separating the recording sheet bearing the non-fixed image on the first surface from said movable member, said separation means having an electricity removing charger for removing electricity from the recording sheet, a peel member being opposite to said electricity removing charger and being inserted between said movable member and the second surface of the recording sheet and having a resistance of 10^3 to 10^{11} Ω, and a support member for supporting said peel member,

wherein a part of said peel member within a discharging area of said electricity removing charger consists of only a resin, and said support member is disposed outside the discharging area of said electricity removing charger and electrically grounded.

5,911,101

PHOTORECEPTOR BELT CLEANING APPARATUS OF LIQUID ELECTROPHOTOGRAPHIC PRINTER

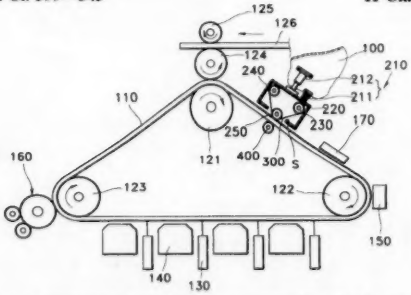
Gyeong-ho Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 2, 1998, Appl. No. 88,483

Claims priority, application Rep. of Korea, Aug. 27, 1997, 97-41639

Int. Cl.[6] **G03G** *15/00;21/00*

U.S. Cl. 399—345 **11 Claims**



1. A photoreceptor belt cleaning apparatus for a liquid electrophotographic printer comprising:

a printer body;

belt rollers rotatably installed in said printer body;

a photoreceptor belt supported by said belt rollers so that said photoreceptor belt can be circulated around said belt rollers;

a housing movably disposed in said printer body so that said housing can be moved towards and away from said photoreceptor belt;

a plurality of rotation rollers rotatably installed in said housing;

a cleaning belt supported by said plurality of rotation rollers so that said cleaning belt can travel around said rotation rollers, said cleaning belt coming into contact with a surface of said photoreceptor belt as said housing is moved towards said photoreceptor belt; and

a reciprocating means for driving the housing towards and away from said photoreceptor belt.

5,911,102

METHOD OF MANUFACTURING SINTERED COMPACT

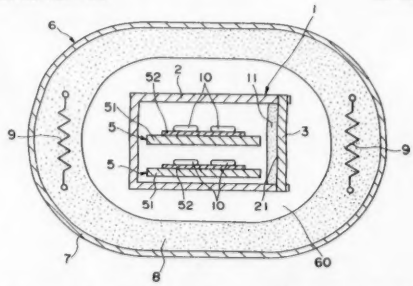
Shoji Takahashi; Syozo Shimizu, and Kenichi Shimodaira, all of Nagano-ken, Japan, assignors to Injex Corporation, Nagano-ken, Japan

Filed Jun. 25, 1997, Appl. No. 881,916

Claims priority, application Japan, Jun. 25, 1996, 8-164994; *Jun. 25, 1996, 8-164996*

Int. Cl.[6] **B22F** *3/12*

U.S. Cl. 419—38 **13 Claims**



1. A method of manufacturing a sintered compact, in which a sintered compact is manufactured by sintering at least one green body mainly composed titanium or titanium alloy powder under the condition that the green body is placed on a setter,

wherein said setter has a green body contact portion which is adapted to contact with the green body, and said green body contact portion is formed of an inactive material which does not react with the green body when sintered; and

said setter is ground or polished creating a surface of said green body contact portion.

5,911,103

SEMICONDUCTOR DEVICE HAVING MOS TRANSISTOR AND METHOD OF MANUFACTURING THE SAME

Tomohiro Yamashita, and Satoshi Shimizu, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of application No. 08/665,115, Jun. 14, 1996, Pat. No. 5,731,233, which is a division of application No. 08/483,036, Jun. 7, 1995, Pat. No. 5,554,871. This application Jan. 26, 1998, Appl. No. 13,241.

Claims priority, application Japan, Nov. 9, 1994, 6-275095

Int. Cl.[6] **M01L** *21/336;21/8249*

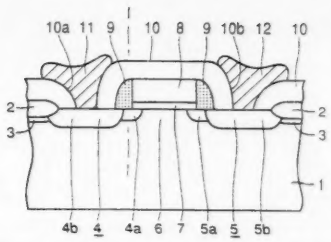
U.S. Cl. 438—199 **2 Claims**

1. A method of manufacturing an MOS transistor, comprising the steps of:

forming a gate insulating film and a gate electrode on a main surface of a semiconductor substrate;

forming an oxide film on a surface of said gate electrode and on an exposed surface of said semiconductor substrate with a CVD method;

implanting nitrogen ions through a surface of said oxide film into at least an internal region in contact with a side surface of said gate electrode and a side surface of said gate insulating film of said oxide film, said gate electrode, and the main surface of said semiconductor substrate on which the exposed surface of said semiconductor substrate is positioned; and



etching said oxide film to form a sidewall oxide film in contact with the side surface of said gate electrode, the side surface of said gate insulating film, and the main surface of said semiconductor substrate, and having nitrogen introduced therein.

5,911,104

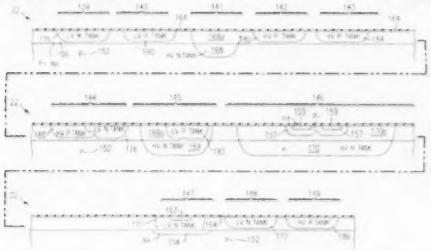
INTEGRATED CIRCUIT COMBINING HIGH FREQUENCY BIPOLAR AND HIGH POWER CMOS TRANSISTORS

Michael C. Smayling, Missouri City; Ronald N. Parker, Houston, and Manuel L. Torreno, Jr., deceased, late of Houston, all of Tex., by Arlene K. Torreno, legal representative, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 20, 1998, Appl. No. 27,369

Int. Cl.[6] H01L *29/12*

U.S. Cl. 438—202 **19 Claims**



1. A method of fabricating a high voltage MOS device and a high frequency bipolar device in a semiconductor substrate, said method comprising the steps of:

introducing a dopant of a second conductivity type into said substrate having a first conductivity type;

diffusing said dopant to form an initial high-voltage tank;

forming a thin epitaxial layer on an upper surface of said substrate such that said thin epitaxial layer overlies said tank, said epitaxial layer having the same conductivity type as said substrate;

forming a high voltage tank extension by introducing a dopant of said second conductivity type into said epitaxial layer in a region directly above said initial high-voltage tank;

forming a homogeneous high-voltage tank comprising said initial high-voltage tank and said high voltage tank extension by diffusing said tank extension, such that said homogeneous high voltage tank extends through said epitaxial layer and has an approximately uniform dopant distribution; and

forming said high voltage MOS device in said homogeneous high voltage tank.

5,911,105

FLASH MEMORY MANUFACTURING METHOD

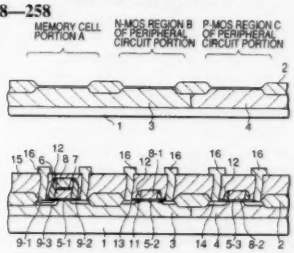
Masakazu Sasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 9, 1997, Appl. No. 890,404

Claims priority, application Japan, Jul. 12, 1996, 8-183123

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 438—258 **10 Claims**


MEMORY CELL PORTION A
N-MOS REGION B OF PERIPHERAL CIRCUIT PORTION
P-MOS REGION C OF PERIPHERAL CIRCUIT PORTION
2
1 3 4
12
15 16 6 8 7 16 12 8-1 16 16 12 16
9-1 9-3 5-1 9-2 1 13 11 5-2 3 14 4 5-3 8-2 2

1. A flash memory manufacturing method comprising the steps of:

forming a memory cell formation region, one conductivity type MOS transistor formation region and an MOS transistor formation region opposite in conductivity type to said one conductivity type MOS transistor on a semiconductor substrate;

forming a polycrystalline silicon layer on an entire surface;

selectively forming a resist film on an entirety of said memory cell formation region and part of said polycrystalline silicon layer which corresponds to gate electrodes in said one conductivity type MOS transistor formation region and said opposite conductivity type MOS transistor formation region;

selectively etching said polycrystalline silicon film by using said resist film as a mask and forming gate electrodes on said one conductivity type MOS transistor formation region and said opposite conductivity type MOS transistor formation region, respectively; and

after the step of forming said gate electrodes, forming a source and drain region in said one conductivity type MOS transistor formation region by injecting one conductivity type impurities by using said resist film as a mask by ion implantation.

5,911,106

SEMICONDUCTOR MEMORY DEVICE AND FABRICATION THEREOF

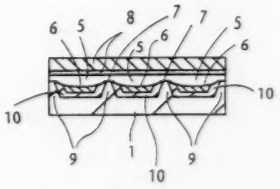
Kazuhiro Tasaka, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 29, 1997, Appl. No. 920,460

Claims priority, application Japan, Aug. 29, 1996, 8-228003

Int. Cl.[6] H01L *21/8236*

U.S. Cl. 438—276 **6 Claims**



1. A method of fabricating a semiconductor memory device, the method comprising the steps of:

providing a substrate of a first conductivity type;

forming a pad oxide film on said substrate and an oxidation resisting film on said pad oxide film;

forming a resist over the whole surface area of said oxidation resisting film, said resist having openings where bit lines are to extend;

selectively etching away said oxidation resisting film using said resist as a mask;

introducing, using said resist as a mask, a first dopant of a second conductivity type opposite to the first conductivity type into said substrate to produce first dopant implanted portions around a first projected range;

introducing, using said resist as a mask, a second dopant of the first conductivity type into said substrate to produce second dopant implanted portions around a second projected range that is deeper than or equal to said first projected range;

removing said resist;

performing thermal oxidation using said oxidation resisting film as a mask to accelerate diffusion of said first dopant in said first dopant implanted portions and diffusion of said second dopant in said second dopant implanted portions to form first dopant diffusion regions and second dopant diffusion regions, respectively, and also to form field oxide regions;

removing said oxidation resisting film and said pad oxide film thereunder to expose surface portions of said substrate;

forming gate oxide regions on said exposed surface portions of said substrate; and

forming word lines that are orthogonal to a direction in which said first dopant diffusion regions extend on said gate oxide regions and said field oxide regions.

5,911,107

MOS TRANSISTOR READ-ONLY MEMORY DEVICE

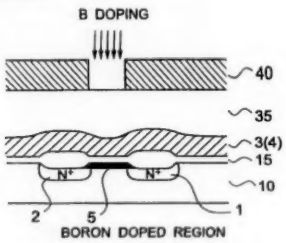
Takao Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of application No. 09/100,895, Jun. 22, 1998. This application Sep. 4, 1998, Appl. No. 148,190.

Claims priority, application Japan, Jun. 23, 1997, 9-166073

Int. Cl.[6] H01L *21/8246*

U.S. Cl. 438—276 **15 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

(a) forming first and second linear regions having a first conductivity type in a semiconductor substrate, wherein said first and second linear regions are substantially parallel;

(b) forming first and second interconnect lines over said semiconductor substrate, wherein said first interconnect line is aligned in a direction which intersects a direction in which said first and second linear regions are aligned and wherein said second interconnect line is substantially parallel to said first interconnect line;

(c) forming a first notch in said first interconnect line between said first and second linear regions to form a narrowed portion of said first interconnect line; and

(d) doping impurities into a first doping area defined between said first and second linear regions and below said narrowed portion of said first interconnect line.

5,911,108

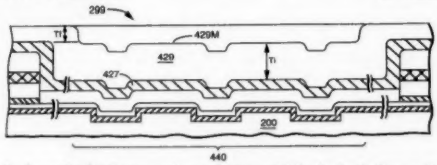
METHOD FOR PROTECTING AN ALIGNMENT MARK ON A SEMICONDUCTOR SUBSTRATE DURING CHEMICAL MECHANICAL POLISHING AND THE RESULTING STRUCTURE

Chu-Tsao Yen, Fremont, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Jan. 29, 1997, Appl. No. 791,064

Int. Cl.[6] H01L *21/76*

U.S. Cl. 438—401 **15 Claims**



1. A method of processing a body, said body including a first layer having a first area and a second layer having a second area, said first layer having an alignment mark in said first area, said method comprising:

forming a third layer over said first layer and over said second layer, said third layer covering said alignment mark;

removing at least a portion of said first layer in said first area to create a preventive window;

forming a fourth layer in said first area and in said second area, a replicated alignment mark being formed on said fourth layer by replication of said alignment mark in said first area; and

planarizing said fourth layer to remove a thickness of said body in all areas other than said first area, said thickness being sufficiently smaller than said depth so as to maintain said replicated alignment mark intact at the end of planarization.

5,911,109

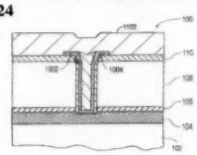
METHOD OF FORMING AN INTEGRATED CIRCUIT INCLUDING FILLING AND PLANARIZING A TRENCH HAVING AN OXYGEN BARRIER LAYER

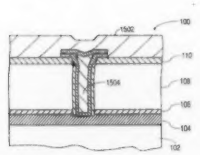
Reda R. Razouk, Sunnyvale; Kulwant S. Egan; Wipawan Yindeepol, both of San Jose, and Waclaw C. Koscielniak, Santa Clara, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of application No. 08/310,612, Sep. 22, 1994, abandoned, which is a division of application No. 08/273,676, Jul. 12, 1994, abandoned. This application Feb. 13, 1997, Appl. No. 800,012.

Int. Cl.[6] H01L *21/62*

U.S. Cl. 438—424 **41 Claims**





1. A method of filling an orifice disposed in a wafer and having an orifice opening onto a surface of the wafer, wherein the wafer surface is external to the orifice, the method comprising the steps of:

forming an oxygen diffusion barrier within the orifice and over the wafer surface contiguous to the orifice opening so that a portion of the oxygen diffusion barrier extends from the orifice opening;

filling the orifice with a filler material;

removing any filler material substantially external to the orifice, wherein the remaining filler material is disposed substantially within the orifice;

following the filler material removing step, concurrently removing the oxygen diffusion barrier except for the oxygen diffusion barrier portion over the wafer surface proximate to the orifice opening to substantially prevent subsequent oxidation of a portion of the wafer adjacent to the orifice opening and under the remaining oxygen diffusion barrier portion over the wafer surface, wherein a lateral dimension of the oxygen diffusion portion over the wafer surface proximate to the orifice opening is about 1 μm; and

forming a dielectric layer over the filler material and at least over the portion of the oxygen diffusion barrier over the wafer surface.

5,911,110

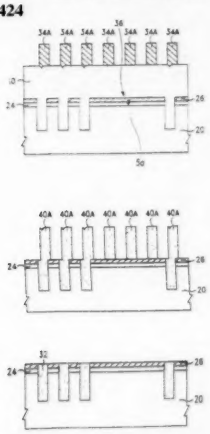
METHOD OF FORMING SHALLOW TRENCH ISOLATION WITH DUMMY PATTERN IN REVERSE TONE MASK

Chen-Hua Yu, Keelung, Taiwan, assignor to Taiwan Semiconductor Manufacturing Co., Ltd., Hsinchu, Taiwan

Filed Oct. 28, 1997, Appl. No. 959,024

Int. Cl.[6] H01L *21/76*

U.S. Cl. 438—424 **16 Claims**



1. A method of forming a trench isolation on a silicon wafer, said method comprising the following steps of:

forming a pad layer on said silicon wafer;

forming a silicon nitride layer over said pad layer;

forming a plurality of trenches in said silicon wafer by etching said silicon nitride layer, said pad layer and said silicon wafer, after said plurality of trenches are formed, said silicon wafer including a first area not including said plurality of trenches, and a second area including said plurality of trenches;

forming a trench filling layer for isolation on said silicon nitride layer and filling into said plurality of trenches; and

patterning said trench filling layer to form a dummy pattern including a plurality of protruding portions on at least a portion of said first area.

5,911,111

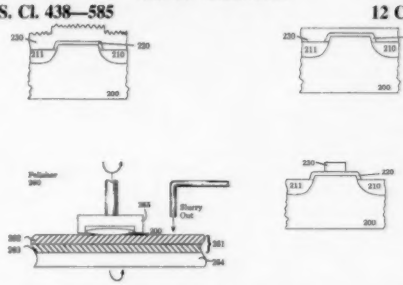
POLYSILICON POLISH FOR PATTERNING IMPROVEMENT

Mark T. Bohr, Aloha; Lawrence N. Brigham, Beaverton; Peter K. Moon, Portland, and Seiichi Morimoto, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of application No. 08/394,368, Feb. 24, 1995, abandoned. This application Sep. 2, 1997, Appl. No. 944,041.

Int. Cl.[6] H01L *21/44*

U.S. Cl. 438—585 **12 Claims**



1. A process of fabricating an integrated circuit comprising the steps of:

depositing a layer comprising polysilicon above a substrate having an isolation region therein;

forming a tungsten film on said layer, wherein said tungsten film is deposited onto said layer prior to a step of polishing said layer;

polishing the surface of said layer such that surface roughness and replication of underlying topography are substantially eliminated and such that the polished surface of said layer extends over substantial portions of said isolation region; and

patterning said layer.

5,911,112

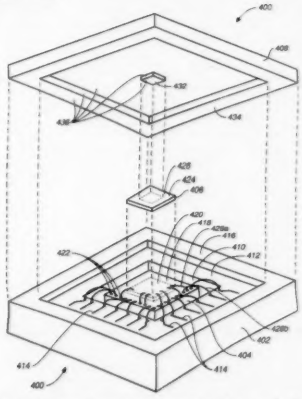
METHOD FOR FORMING ELECTRICAL CONNECTIONS BETWEEN A SEMICONDUCTOR DIE AND A SEMICONDUCTOR PACKAGE

Scott Kirkman, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of application No. 08/608,679, Feb. 29, 1996, Pat. No. 5,793,104. This application Aug. 1, 1997, Appl. No. 904,530.

Int. Cl.[6] H01L *21/44*

U.S. Cl. 438—612 **29 Claims**



1. A method of manufacturing a semiconductor device assembly, comprising the steps of:

providing a semiconductor die with an active surface, said active surface having a receiving area and a plurality of bond pads disposed around the periphery of the receiving area;

providing a package case having at least one conductive case pattern and a plurality of external connectors, the at least one conductive case pattern connected to at least one of the plurality of external connectors, a platform having a receiving side and at least one conductive platform pattern on a side opposite said receiving side forming a conductive side, and a package lid;

attaching said semiconductor die to said package case;

attaching said receiving side of said platform to said receiving area of said active surface of said semiconductor die;

connecting at least one of the plurality of bond pads to said conductive side of said platform;

connecting at least one of the plurality of bond pads to the other of the plurality of external connectors; and

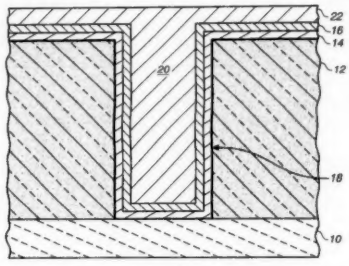
connecting said package lid to the at least one conductive case pattern and to said conductive side of said platform to form a conductive path between said conductive side of said platform and said conductive case pattern.

5,911,113

SILICON-DOPED TITANIUM WETTING LAYER FOR ALUMINUM PLUG

Gongda Yao, Fremont; Peijun Ding, San Jose; Zheng Xu, Foster City, and Hoa Kieu, Sunnyvale, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 18, 1997, Appl. No. 820,512
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—649 **13 Claims**



1. A method of fabricating a metal plug in a semiconductor workpiece, comprising the sequential steps of:

providing a semiconductor workpiece which includes a first conductor or semiconductor layer and a dielectric layer overlying the first layer, wherein

the dielectric layer has an exposed outer surface, and

the dielectric layer includes a hole having a bottom at the first layer and having a side wall extending from the first layer to an aperture at the exposed outer surface;

depositing a silicon-doped titanium layer having a concentration of silicon no greater than 20% by weight, wherein the silicon-doped titanium layer is deposited so as to cover the side wall of the hole; and

depositing said metal over the silicon-doped titanium layer;

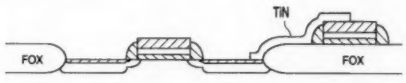
wherein the step of depositing said metal is initiated while the side wall of the hole remains covered by said silicon-doped titanium layer having an atomic molar ratio of titanium to silicon greater than 1:2.

5,911,114

METHOD OF SIMULTANEOUS FORMATION OF SALICIDE AND LOCAL INTERCONNECTS IN AN INTEGRATED CIRCUIT STRUCTURE

Abdalla Aly Naem, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 21, 1997, Appl. No. 822,301
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—684 **5 Claims**



1. A method of simultaneously forming metal salicide and a local interconnect structure in a semiconductor integrated circuit structure, wherein the semiconductor integrated circuit structure includes first and second spaced-apart source/drain regions formed in an active device region of a silicon substrate, the active device region being defined by field oxide regions formed in the substrate adjacent the active device region, the first and second spaced-apart source/drain regions defining a substrate channel region therebetween, the semiconductor integrated circuit structure further including a conductive gate region formed over the channel region and separated therefrom by a gate oxide layer, the conductive gate region and the gate oxide layer having oxide sidewall spaces formed thereon, the semiconductor integrated circuit structure further including a conductive element, the method comprising:

while maintaining the semiconductor integrated circuit structure in a vacuum, forming a layer of refractory metal on the semiconductor integrated circuit structure;

forming a layer of refractory metal nitride on the refractory metal layer;

performing a first rapid thermal anneal step in nitrogen ambient to form refractory metal salicide on the source/drain regions and on the gate region;

forming a local interconnect mask to protect a portion of the refractory metal nitride layer and underlying refractory metal that extends from over a selected area of a source/drain region to the conductive element and defines a local interconnect region;

removing portions of the refractory metal nitride layer and underlying refractory metal not protected by the local interconnect mask;

removing the local interconnect mask;

performing a second rapid thermal anneal step to convert the underlying refractory metal of the local interconnect region to refractory metal nitride,

and wherein the step of forming a layer of refractory metal and the step of forming a layer of refractory metal nitride are performed sequentially in-situ without breaking vacuum.

5,911,115

DATA TRANSMISSION OVER AMPS NETWORKS

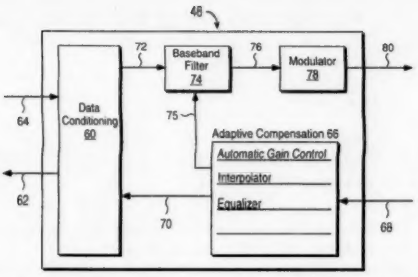
N. Gopolan Nair, and Zdenek Brun, both of Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1995, Appl. No. 414,907
Int. Cl.[6] H04B *1/62*
U.S. Cl. 455—63 **15 Claims**

13. A method to reduce distortion in a communication between a first and a second modem coupled together by a transmission channel that is in part wireless, wherein said communication includes a transmit signal and a receive signal at each modem, said method comprising:

monitoring a wireless communication protocol control signal inherent in said wireless part of said transmission channel, and having a known waveform at said first modem;

measuring said distortion in said wireless communication protocol control signal repeatedly;



repeatedly and unilaterally generating a pre-distortion signal that is a scaled and inverted form of said measured distortion by said first modem; and

introducing said pre-distortion signal to said transmit signal from said first modem.

5,911,116

TRANSMITTING-RECEIVING SWITCH-OVER DEVICE COMPLETE WITH SEMICONDUCTORS

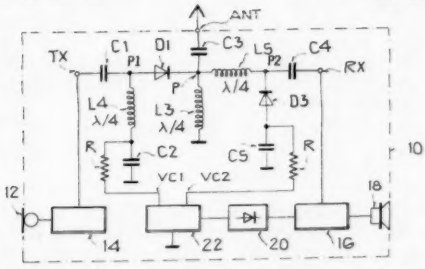
Manfred Nosswitz, Munich, Germany, assignor to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Feb. 13, 1997, Appl. No. 799,298

Claims priority, application Germany, Mar. 19, 1996, 196 10 760

Int. Cl.[6] H04B *1/44*

U.S. Cl. 455—83 **13 Claims**



1. A transmitting-receiving switch over circuit arrangement comprising:

(a) a circuit junction point (P),

(b) a transmitter output (TX) for providing a radio frequency transmitter output signal,

(c) a transmitting first circuit section connecting said transmitter output (TX) to said circuit junction point (P) for transmitting said radio frequency transmitter output signal to said circuit junction point (P),

(d) an antenna output terminal (ANT) coupled to said circuit junction point (P) for transmitting said radio frequency transmitter output signal or for receiving a radio frequency receiver input signal,

(e) a receiver input terminal (RX) for receiving said radio frequency receiver input signal,

(f) a receiving second circuit section connecting said receiver input terminal (RX) to said circuit junction point (P) for feeding said radio frequency receiver input signal to said receiver input terminal (RX),

(g) a controllable first semiconductor radio frequency switch (**D1**, **D4**, **D6**) connected to said transmitting circuit section,

(h) a first control input (**VC1**) connected to said first semiconductor radio frequency switch (**D1**, **D4**, **D6**) for supplying a first control signal to said first semiconductor radio frequency switch (**D1**, **D4**, **D6**) to close or open said first semiconductor frequency switch (**D1**, **D4**, **D6**),

(i) a controllable second semiconductor radio frequency switch (**D2**, **D3**, **D5**, **D7**) connected to said receiving circuit section, and

(j) a second control input (**VC2**) connected to said second semiconductor radio frequency switch (**D2**, **D3**, **D5**, **D7**) for supplying a second control signal to said second semiconductor radio frequency switch (**D2**, **D3**, **D5**, **D7**) for controlling said second semiconductor radio frequency switch to assume any one of three stages: open for blocking said receiver input signal, closed for passing said receiver input signal, and attenuated for damping said receiver input signal, whereby at least said second controllable semiconductor radio frequency switch (**D2**, **D3**, **D5**, **D7**) is controllable independently of any control of said first semiconductor radio frequency switch (**D1**, **D4**, **D6**).

5,911,117

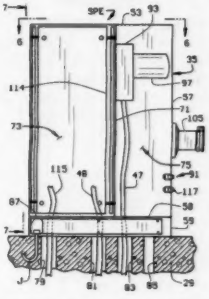
SERVICE PROTECTION ENCLOSURE FOR AND METHOD OF CONSTRUCTING A REMOTE WIRELESS TELECOMMUNICATION SITE

William H. Bhame, Marietta; George Robert Cutler, Fulton County; Bassem Rustom, Lilburn, and Robert L. Dick, IV, Atlanta, all of Ga., assignors to PCS Solutions, LLC, Atlanta, Ga.

Continuation of application No. 08/504,199, Jul. 19, 1995, Pat. No. 5,710,804. This application Oct. 14, 1997, Appl. No. 950,170.

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—90 **4 Claims**

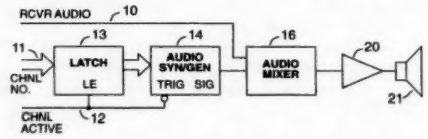


1. A service protection enclosure for installation at a cellular telephone or other wireless telecommunication site comprising a cabinet being adapted to be installed at the site, said site having an antenna and radio frequency equipment for sending and receiving signals to and from said antenna via radio frequency service lines, said cabinet having side walls, a top, and at least one door providing access to the interior of said cabinet, said cabinet receiving telephone lines linking said radio frequency equipment to a telephone network and RF service lines linking said radio frequency equipment to said cabinet and linking said cabinet to said antenna, the interior of said cabinet having at least two separate compartments therewithin including a first compartment for housing termination panels for terminating said telephone lines and a second compartment for terminating said radio frequency lines, said telephone lines and said radio frequency lines being connected to a single point grounding system for grounding of said telephone lines and said of radio frequency lines to common ground potential.

5,911,118
SCANNER WITH AUDIBLE IDENTIFICATION OF TUNED CHANNEL

Jeffrey S Morris, 762 East St., Dedham, Mass. 02026-5023; Sheldon B Michaels, 21 Stonebrook Rd., Sudbury, Mass. 01776-2735, and Mark J Giubardo, 9 Wheeler St., Pepperell, Mass. 01463-1002

Filed Mar. 14, 1997, Appl. No. 818,151
Int. Cl.[6] H04B *1/18*
U.S. Cl. 455—156.1 **6 Claims**



1. A scanning receiver channel identification apparatus comprising:

a) a scanning receiver,

b) means for generating annunciations to be associated with the channels to which said scanning receiver is tuned,

c) means for associating said annunciations with said channels to which said scanning receiver is tuned,

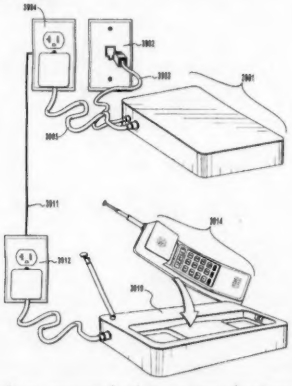
d) means for incorporating said annunciations into the detected output of said scanning receiver, and

e) means for selecting said annunciations from a predefined set created or supplied by the user and maintained by said scanning receiver.

5,911,119
SECURE CORDLESS TELEPHONE EXTENSION SYSTEM AND METHOD

David B. Bartholomew, West Valley City; Scott R. Bullock, South Jordan, and John M. Knab, Sandy, all of Utah, assignors to Phonex Corporation, Midvale, Utah

Continuation-in-part of application No. 08/639,508, Apr. 29, 1996, Pat. No. 5,852,785, which is a continuation of application No. 08/034,086, Mar. 22, 1993, Pat. No. 5,530,737. This application Oct. 15, 1996, Appl. No. 729,876.
This patent is subject to a terminal disclaimer
Int. Cl.[6] H04M *11/00;* **H04Q** *7/32*
U.S. Cl. 455—402 **6 Claims**



1. A telephone communications system for transmitting and receiving telephone communications via AC power lines in a building, the system comprising:

a) a base unit and an extension unit, each said unit comprising:

i) off hook circuitry for detecting off hook status in the extension unit;

ii) means for converting analog telephone communications signals to digital data signals;

iii) means for generating a transmission carrier;

iv) code division multiple access transmitter means for modulating said transmission carrier by said digital data signals;

v) at least one additional multiple access means for further modulating and controlling transmission and reception of said modulated transmission carrier, said additional multiple access means being selected from the group consisting of:

1) time division multiple access multiplexing means for controlling the times at which the digital data signals are transmitted and received;

and

2) frequency division multiple access means for changing said transmission carrier's frequency;

vi) means for coupling said modulated transmission carrier to the power lines of the building;

vii) code division multiple access receiving means for demodulating said modulated transmission carrier received via said power lines to produce analog telephone communications signals;

b) means for coupling at least one subscriber telephone line to said base unit;

c) ring detect circuitry associated with said base unit for detecting a ring signals in said subscriber line and transmitting a ring signal via said power lines in said building to the extension unit;

d) ring generator circuitry associated with said extension unit for detecting a ring signal transmitted via said power lines and generating a ring signal in said extension unit;

e) caller identification detect circuitry associated with said base unit for detecting caller identification signals transmitted with said ring signal and transmitting a caller identification signal via said power lines in said building to said extension unit;

f) caller identification circuitry associated with said extension unit for detecting said caller identification signal transmitted via said power lines; and

g) a display device on said extension unit on which caller identification information is presented to the telephone subscriber.

5,911,120
WIRELESS COMMUNICATION SYSTEM HAVING MOBILE STATIONS ESTABLISH A COMMUNICATION LINK THROUGH THE BASE STATION WITHOUT USING A LANDLINE OR REGIONAL CELLULAR NETWORK AND WITHOUT A CALL IN PROGRESS

Keith Jarett, Oakland; Roland E. Williams, Walnut Creek, both of Calif.; Michael A. Raffel; Roderick Nelson, both of Redmond, Wash.; Ileana A. Leuca, Bellevue, Wash.; Tony S. Lee, Alameda, Calif.; Christopher G. Lawrence; Masud Kibria, both of Kirkland, Wash.; David R. Glass, Redmond, Wash., and Michael D. Bamburak, Columbia, Md., assignors to AT&T Wireless Services, Kirkland, Wash., and Atmel Corp, San Jose, Calif.

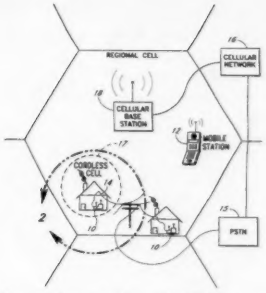
Filed Sep. 8, 1995, Appl. No. 526,066
Int. Cl.[6] H01S *4/00*
U.S. Cl. 455—417 **6 Claims**

1. A wireless communication system, comprising:

a base station connected to a landline of a public switched telephone network, and having a transceiver, said transceiver having at least first and second audio voice channels;

a first regional cellular network compatible mobile station registered to communicate with a regional cellular network, and communicating with said base station on said first audio channel,

a second regional cellular network compatible mobile station registered to communicate with a regional cellular network, and communicating with said base station on said second audio channel, wherein said first and second mobile stations establish a communication link with each other through said



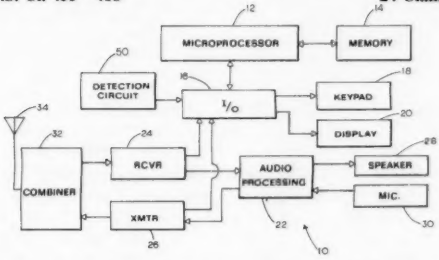
base station without using said landline or said regional cellular network, and without a call in progress on said landline or said regional cellular networks.

5,911,121

METHOD AND APPARATUS FOR AUTOMATICALLY CONFIGURING A CONTROL PROGRAM FOR A MOBILE RADIO COMMUNICATION DEVICE

Craig A. Andrews, Raleigh, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed May 23, 1996, Appl. No. 652,374
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—418 **24 Claims**



1. A re-configurable mobile radio communication device comprising:

a) a housing having an interchangeable component,

b) a programmable controller contained in said housing for controlling the operation of said mobile radio communication device according to a configurable control program having a plurality of selectable program configurations;

c) a program selector attached to said interchangeable component of said housing, said program selector including one or more selector elements for indicating a selected program configuration; and

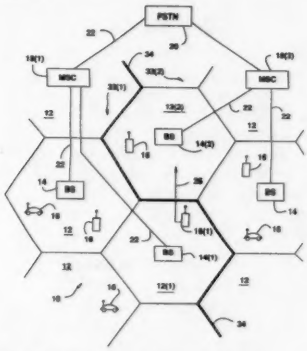
d) a detection circuit for detecting the selector elements when said component is attached to said device, and for generating a configuration signal indicative of the selected program configuration, said programmable controller being responsive to the configuration signal to automatically configure the control program according to the selected program configuration.

5,911,122

INTER-EXCHANGE PASSING OF HAND-OFF RELATED PARAMETERS

Michel Corriveau, St-Hubert, and Michel Houde, St Laurent, both of Canada, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 1, 1996, Appl. No. 724,693
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 455—432 **9 Claims**



1. A cellular telephone network, comprising:

a first system area having a plurality of first cells including a first border cell, the first border cell having assigned thereto certain hand-off related parameters;

a second system area, bordering the first system area, the second system area having a plurality of second cells including a second border cell, the second border cell also having assigned thereto certain hand-off related parameters;

a mobile station roaming between the first border cell in the first system area and the second border cell in the second system area;

means for signaling messages between the first and second system areas, the messages transmitting the certain hand-off related parameters assigned to the first border cell to the second system area and transmitting the certain hand-off related parameters assigned to the second border cell to the first system area, the transmitted parameters for subsequent first and second system area use in connection with the evaluation of an as yet to be initiated future inter-system hand-off request with respect to the roaming mobile station; and

means for storing the certain hand-off related parameters received by each one of the first and second system areas, wherein the stored certain hand-off related parameters are evaluated by each one of the first and second system areas in connection with future inter-system hand-off requests.

5,911,123

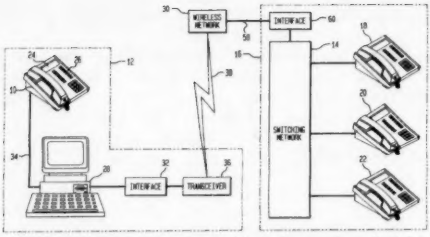
SYSTEM AND METHOD FOR PROVIDING WIRELESS CONNECTIONS FOR SINGLE-PREMISES DIGITAL TELEPHONES

Shmuel Shaffer, Palo Alto; William J. Beyda, Cupertino, and Mieu-Hong Dang, San Jose, all of Calif., assignors to Siemens Information and Communications Networks, Inc., Boca Raton, Fla.

Filed Jul. 31, 1996, Appl. No. 690,662
Int. Cl.[6] H04M *11/00*
U.S. Cl. 455—554 **17 Claims**

1. A system for supporting digital telecommunications comprising:

a single-premises digital telephone of a type compatible with wireline digital telecommunications with other-premises digital telephones, said single-premises digital telephone being at a local site;



converter means connected to said single-premises digital telephone at said local site for converting between a digital wireline signaling format compatible with bidirectional wireline telecommunications and an analog wireless signaling format compatible with bidirectional wireless telecommunications, said converter means being connected to said single-premises digital telephone for signal transfers using said digital wireline signaling format; and

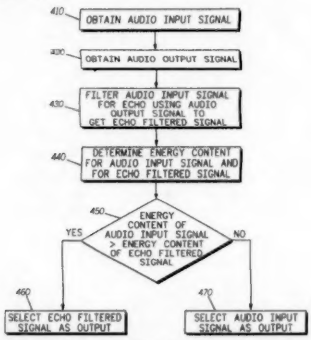
transceiver means, connected to said converter means at said local site, for signal exchanges with said converter means using said analog wireless signaling format and for wirelessly transmitting and receiving telecommunications signals using said analog wireless signaling format said single-premises digital telephone being isolated from digital wireline telecommunications outside of said local site such that communication with said single-premises digital telephone from remote sites is limited to wireless communications via said transceiver means.

5,911,124

METHOD AND APPARATUS FOR APPLYING ECHO MITIGATION IN A COMMUNICATION DEVICE

Patrick J. Doran, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1997, Appl. No. 794,696
Int. Cl.[6] H04B *3/20*
U.S. Cl. 455—570 **9 Claims**


410
OBTAIN AUDIO INPUT SIGNAL
420
OBTAIN AUDIO OUTPUT SIGNAL
430
FILTER AUDIO INPUT SIGNAL FOR ECHO USING AUDIO OUTPUT SIGNAL TO GET ECHO FILTERED SIGNAL
440
DETERMINE ENERGY CONTENT FOR AUDIO INPUT SIGNAL AND FOR ECHO FILTERED SIGNAL
450
ENERGY CONTENT OF AUDIO INPUT SIGNAL > ENERGY CONTENT OF ECHO FILTERED SIGNAL
YES
NO
460
SELECT ECHO FILTERED SIGNAL AS OUTPUT
470
SELECT AUDIO INPUT SIGNAL AS OUTPUT

4. A method of echo cancellation in a communication device operable to communicate over a wireless channel, the communication device having an audio output device and an audio input device, the method comprising the steps of:

receiving a communication signal over a wireless communication channel;

processing the communication signal to generate an audio output signal;

coupling the audio output signal to an adaptive filter for filtering echo signals;

obtaining an audio input signal from the audio input device;

filtering the audio input signal with the adaptive filter to obtain an echo filtered signal;

determining energy content for the audio input signal and for the echo filtered signal;

transmitting the echo filtered signal over the wireless communication channel when the energy content of the audio input signal exceeds the energy content of the echo filtered signal; and

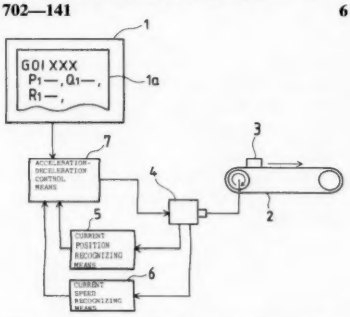
transmitting the audio input signal over the wireless communication channel when the energy content of the echo filtered signal exceeds the energy content of the audio input signal.

5,911,125

CNC ACCELERATION-DECELERATION CONTROL APPARATUS AND METHOD

Kentaro Fujibayashi, Musashino, and Kunihiko Murakami, Hino, both of Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

PCT No. PCT/JP96/02347, § 371 Date Apr. 16, 1997, § 102(e) Date Apr. 16, 1997, PCT Pub. No. WO97/08597, PCT Pub. Date Mar. 6, 1997
PCT Filed Aug. 22, 1996, Appl. No. 817,413
Claims priority, application Japan, Aug. 23, 1995, 7-214641
Int. Cl.[6] H02P *5/00;7/00;* **G05B** *19/19*
U.S. Cl. 702—141 **6 Claims**



1. A CNC acceleration-deceleration control apparatus, comprising:

a program storage device storing a command program including a plurality of command blocks and an acceleration-deceleration starting position for each block which include an acceleration-deceleration starting position, a time constant for acceleration-deceleration control to be started at said acceleration-deceleration starting position, and a target speed to be attained by said acceleration or deceleration control;

a current position recognizing device recognizing the current position of a servomotor driving and controlling a machine;

a current speed recognizing device recognizing the current speed of said servomotor; and

an acceleration-deceleration control device which executes said command blocks read from said program storage device, and when recognizing that the current position data received from said current position recognizing device has reached the acceleration-deceleration starting position set in one of the command blocks, starting an acceleration-deceleration operation for the servomotor with the time constant set in the command block, and when recognizing that the current speed data received from said current speed recognizing device has reached the target speed set in said one of the command blocks, completing said acceleration-deceleration operation such that the servomotor is kept driven at said target speed.

5,911,126

METHOD AND ARRANGEMENT FOR DIGITIZED THREE-DIMENSIONAL SENSING OF THE SHAPE OF BODIES OR BODY PARTS

Robert Massen, Am Rebberg 29, 78337 Öhningen, Germany

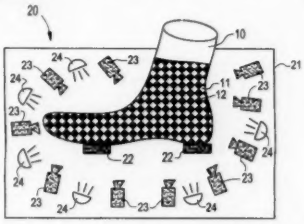
PCT No. PCT/EP95/01934, § 371 Date Nov. 22, 1996, § 102(e) Date Nov. 22, 1996, PCT Pub. No. WO95/31934, PCT Pub. Date Nov. 30, 1995

PCT Filed May 22, 1995, Appl. No. 737,595

Claims priority, application Germany, May 22, 1994, 44 17 872

Int. Cl.[6] **G05B** *19/42;* **A61B** *5/107*

U.S. Cl. 702—153 **18 Claims**



1. A method for digitized three-dimensional sensing of the shape of bodies or body parts, particularly human body parts or limbs, for largely automated production of artificial limbs or adapted body parts, said method comprising the steps of:

covering said body or body part with a thin, tight-fitting envelope carrying a high-contrast pattern;

recovering images of the covered body or body part with a plurality of cameras cooperating in the manner of stereo cameras having overlapping image areas; and

obtaining, by computerized automatic coordination of the corresponding high-contrast pattern recorded in each of the images taken by said cameras, digitized data representative of three-dimensional shape.

5,911,127

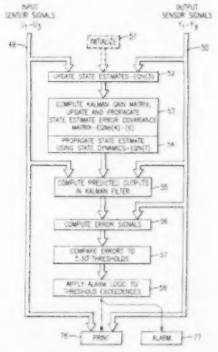
PREDICTION OF CHILLER COMPRESSOR MOTOR OVERHEATING

Sharayu Tulpule, Farmington, Conn., assignor to Carrier Corporation, Farmington, Conn.

Filed Jun. 5, 1997, Appl. No. 869,323

Int. Cl.[6] **G05B** *1/01*

U.S. Cl. 702—190 **6 Claims**



1. A method of predicting chiller compressor motor overheating, comprising:

once for each chiller type

preparing, in a computer, a high order mathematical model of the chiller based on nonlinear algebraic and differential equations which describe the flow, pressure and temperature dynamics of the chiller;

exciting the chiller model with random values of selected input signals at each of a plurality of inputs, the variations of which will provide variations in values of measurable output parameters and values of unmeasurable, computable chiller states affected by motor overheating;

for each variation in said excitation input signals, recording one set of values including each of said input values, each of said output values and each of said computable chiller states;

using linear regression equations on the stored data, fitting said recorded chiller state values and output values to determine matrix values for a low order linear state space model of the chiller;

creating a low order state space model comprising a set of linear equations using the matrix values determined in the step preceding this step;

developing a Kalman filter based on said low order linear state space model created in the step preceding this step; and

in normal operation of each chiller

operating said chiller by providing input signals thereto including said selected inputs while measuring the values of said selected inputs and said measurable output parameters;

providing said measured input values and output values to a computer employing said Kalman filter to determine predicted output values;

comparing said predicted output values with said measured output values; and

indicating an alarm whenever the variance between the computed output values and the measured output values are indicative of a motor overheating condition.

5,911,128

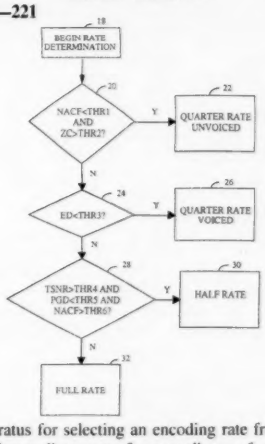
METHOD AND APPARATUS FOR PERFORMING SPEECH FRAME ENCODING MODE SELECTION IN A VARIABLE RATE ENCODING SYSTEM

Andrew P. DeJaco, 10424 Flanders Cove, San Diego, Calif. 92126

Continuation of application No. 08/286,842, Aug. 5, 1994. This application Mar. 11, 1997, Appl. No. 815,354.

Int. Cl.[6] **G10L** *9/14*

U.S. Cl. 704—221 **33 Claims**



1. An apparatus for selecting an encoding rate from a predetermined set of encoding rates for encoding a frame of speech including a plurality of speech samples, comprising:

mode measurement means, responsive to said speech samples and to at least one signal derived from said speech samples, for generating a set of parameters indicative of characteristics of said frame of speech; and

rate determination logic means for receiving said set of parameters, for determining the psychoacoustic significance of said

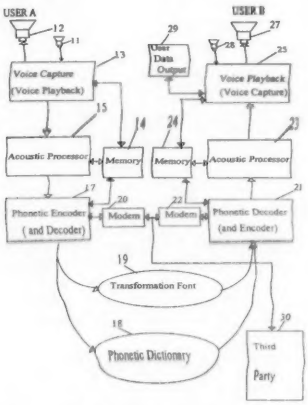
speech samples in accordance with said set of parameters and for selecting an encoding rate from said predetermined set of encoding rates using predetermined rate selection rules, wherein said rate selection rules select said encoding rate which allocates a first number of bits for the encoding of said speech samples when said speech samples are determined to be of greater psychoacoustic significance and wherein said rate selection rules select said encoding rate which allocates a second number of bits for the encoding of said speech samples when said speech samples are determined to be of a lesser psychoacoustic significance and wherein said first number of bits is greater than said second number of bits.

5,911,129

AUDIO FONT USED FOR CAPTURE AND RENDERING

Timothy N. Towell, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 13, 1996, Appl. No. 764,962
Int. Cl.[6] G10L *3/00*
U.S. Cl. 704—272 **15 Claims**



1. A method of encoding an analog voice signal for playback in a form in which the identity of the voice is disguised comprising:

a. storing a plurality of voice fonts;

b. receiving the analog voice signal;

c. converting the analog voice signal to a first digital voice signal;

d. dividing the digital voice signal into a plurality of sequential speech segments, wherein each of said voice fonts corresponds to a different type of voice when combined with said plurality of speech segments;

e. selecting one of said stored voice fonts as a playback voice font;

f. generating as the encoded voice signal for playback said plurality of sequential speech segments and said selected font and an identification of said selected font;

g. transmitting said sequential speech segments and said selected voice font encoded voice signal for playback over a transmission medium from a first location;

h. analyzing the digital voice signal to identify characteristics of the voice signal and transmitting said characteristics of the voice signal over said medium;

i. receiving said sequential speech segments and said selected voice font for playback at a second location;

j. converting said encoded voice signal into a second digital voice signal by reassembling said speech segments with said selected voice font as the voice font of said second digital signal;

k. converting said second digital signal to a playback audio signal;

l. playing said audio signal; and

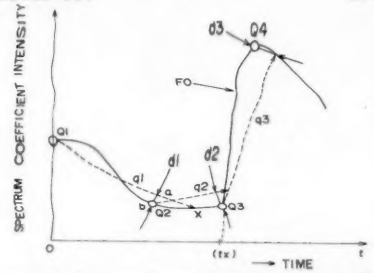
m. displaying information concerning the characteristics of said voice at said second location.

5,911,130

AUDIO SIGNAL COMPRESSION AND DECOMPRESSION UTILIZING AMPLITUDE, FREQUENCY, AND TIME INFORMATION

Kyoichi Shimizu, Yokohama; Toshihiro Maruyama, Kawasaki, and Takafumi Kizuki, Yokosuka, all of Japan, assignors to *Victor Company of Japan, Ltd., Yokohama, Japan*

Filed Oct. 30, 1996, Appl. No. 739,553
Int. Cl.[6] G10L *3/02*
U.S. Cl. 704—500 **20 Claims**



1. A method of compressing and decompressing an audio signal, comprising the steps of:

sampling an audio signal per regular sampling interval to obtain a constant number of sampled values;

orthogonal transforming the sampled values per constant period to obtain sequential orthogonal transfer functions;

extracting feature points representing change in coefficient intensity of the orthogonal transfer functions per constant frequency interval; and

obtaining coefficient intensity data, frequency data, and time data of the feature points;

reproducing the orthogonal transfer functions by interpolating the coefficient intensity of the orthogonal transfer functions on the basis of the coefficient intensity data, frequency data, and time data;

inverse-orthogonal transforming the reproduced orthogonal transfer functions to reproduce the a constant number of sampled values; and

converting the reproduced sampled values into the audio signal.

5,911,131

COMPUTER AIDED CALCULATION, APPRAISAL AND VALUATION OF WORKS OF ART

Tommy Vig, 18212 Nordhoff St., Northridge, Calif. 91325

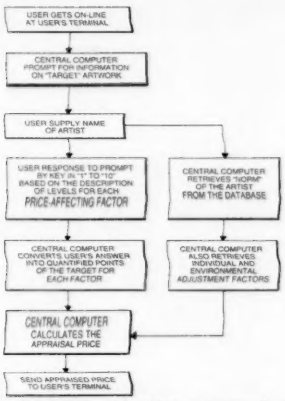
Filed Dec. 20, 1995, Appl. No. 575,936
Int. Cl.[6] G06F *17/00; 17/60*
U.S. Cl. 705—1 **18 Claims**

1. A method of appraising a target artwork by a particular artist, comprising:

a. identifying multiple value-affecting factors, assigning multiple levels to each factor, and determining a relative value-affecting rate for each level;

b. establishing a database of multiple records, each including personal information of an individual artist and information of such individual artist's previously sold artworks corresponding to said value-affecting factors;

c. deriving a NORMal price and a collection of NORMal points based on said value-affecting rates assigned to respective levels of said value-affecting factors, and storing the NORMal price and NORMal points in said database, including averaging all of said value-affecting rates assigned to a respective one of said assigned levels on all of said individual artist's previously sold artworks;


USER GETS ON-LINE AT USER'S TERMINAL
CENTRAL COMPUTER PROMPT FOR INFORMATION ON "TARGET" ARTWORK
USER SUPPLY NAME OF ARTIST
USER RESPONSE TO PROMPT BY KEY IN "1" TO "10" BASED ON THE DESCRIPTION OF LEVELS FOR EACH PRICE-AFFECTING FACTOR
CENTRAL COMPUTER RETRIEVES "NORM" OF THE ARTIST FROM THE DATABASE
CENTRAL COMPUTER CONVERTS USER'S ANSWER INTO QUANTIFIED POINTS OF THE TARGET FOR EACH FACTOR
CENTRAL COMPUTER ALSO RETRIEVES INDIVIDUAL AND ENVIRONMENTAL ADJUSTMENT FACTORS
CENTRAL COMPUTER CALCULATES THE APPRAISAL PRICE
SEND APPRAISED PRICE TO USER'S TERMINAL

d. gathering information of said target artwork, including the particular artist's name and information of the target artwork corresponding to said value-affecting factors, and converting the information of the target artwork into a collection of quantified points, including correlating the information of said target artwork with a respective one of value-affecting rates of said assigned levels of each value-affecting factors; and

e. retrieving from said database the NORMal price and the collection of NORMal points for the particular artist, and calculating an appraised price of the target artwork based on said NORMal price and said collection of NORMal points of said particular artist, and said collection of said quantified points of said target artwork.

5,911,132

METHOD USING CENTRAL EPIDEMIOLOGICAL DATABASE

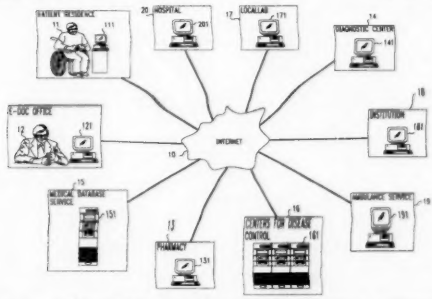
Neil James Alexander Sloane, Highland Park, N.J., assignor to **Lucent Technologies Inc., Murray Hill, N.J.**

Continuation of application No. 08/428,988, Apr. 26, 1995, abandoned. This application Oct. 14, 1997, Appl. No. 949,646.

This patent is subject to a terminal disclaimer

Int. Cl.° G06F *159/00;* **A61B** *5/00*

U.S. Cl. **705—3** **5 Claims**



1. An epidemiological database computer method comprising the steps of

receiving, and storing in a memory, epidemiological transaction record information received over a predetermined recent time-frame in a multiplicity of first electronic data communications, said epidemiological transaction records each including epidemiological information about a respective patient, a description of medical symptoms exhibited by that patient, and a diagnosis of a medical condition of that patient,

receiving an incoming second electronic data communication having symptom information and epidemiological information about an individual patient, and

transmitting to the source of said second electronic data communication an electronic data communication which describes at least one diagnosis which is the same as the diagnosis contained in at least one of said epidemiological transaction records, said at least one epidemiological transaction record including symptoms and epidemiological information which correspond to those included in said second electronic data communication.

5,911,133

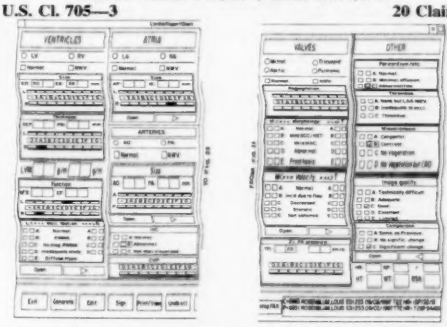
USER INTERFACE FOR ECHOCARDIOGRAPHIC REPORT GENERATION

Jeffrey Scott Soble, Evanston, Ill., assignor to Rush-
Presbyterian -St. Luke's Medical Center, Chicago, Ill.

Filed Oct. 22, 1997, Appl. No. 956,135

***Int. Cl.°* A61B** *8/00;8/14;* **G06F** *15/00;3/00*

U.S. Cl. 705—3 **20 Claims**



11. A computer-implemented method for providing a user interface for echocardiographic report generation, the method comprising the steps of:

displaying a patient menu screen wherein said patient menu screen includes means for selecting an existing patient record and means for establishing a new patient record;

displaying a first echocardiographic data screen in response to a first user input for selecting a desired one of said existing patient records and for establishing said new patient record wherein said first screen includes a plurality of data entry windows for entering echocardiographic data, wherein at least one data entry window displays echocardiographic data for two paired cardiac structures;

selecting a desired one of said paired cardiac structures; and

entering patient data pertaining to a selected cardiac structure.

5,911,134

METHOD FOR PLANNING, SCHEDULING AND MANAGING PERSONNEL

Ronald M. Castonguay, Carrollton, and Gary B. Crockett, Plano, both of Tex., assignors to IEX Corporation, Richardson, Tex.

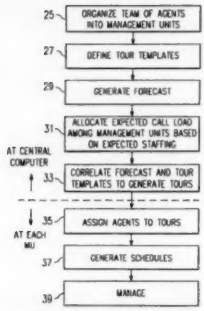
Filed Oct. 12, 1990, Appl. No. 597,370

Int. Cl.° G06F *17/60*

U.S. Cl. 705—9 **4 Claims**

1. A method, using a central computer and a plurality of workstation computers connected to the central computer for planning and managing personnel in an environment in which there is a constantly varying event load by time of day and by day of week, the personnel including a team of servers responsible for servicing the event load, each of the central and workstation computers including a processor, comprising the steps of:

(a) organizing the team of servers responsible for servicing the constantly varying event load into a plurality of management


ORGANIZE TEAM OF AGENTS INTO MANAGEMENT UNITS
DEFINE TOUR TEMPLATES
GENERATE FORECAST
ALLOCATE EXPECTED CALL LOAD AMONG MANAGEMENT UNITS BASED ON EXPECTED STAFFING
AT CENTRAL COMPUTER
CORRELATE FORECAST AND TOUR TEMPLATES TO GENERATE TOURS
ASSIGN AGENTS TO TOURS
AT EACH MU
GENERATE SCHEDULES
MANAGE

units, each management unit having at least one workstation computer for managing one or more groups of individual servers at unit and for communicating with the central computer;

(b) using the processor of the central computer to generate a forecast of (i) an event load expected to occur during intervals of a forecast time period, and (ii) a number of servers required to service the expected event load during each interval of the forecast time period;

(c) using the processor of the central computer to allocate the expected event load among the plurality of management units according to a predetermined number of servers expected to be available at each management unit during each interval of the forecast time period; and

(d) using the processor of the central computer to reallocate the expected event load among the plurality of management units during one or more intervals of the forecast time period, the reallocated event load being communicated from the central computer to the management unit workstation computers.

5,911,135

SYSTEM FOR MANAGING FINANCIAL ACCOUNTS BY A PRIORITY ALLOCATION OF FUNDS AMONG ACCOUNTS

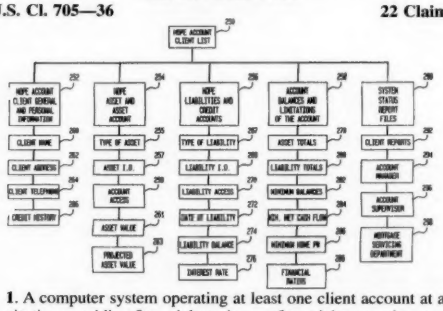
Charles Agee Atkins, Amelia Island, Fla., assignor to Proprietary Financial Products, Inc., Charleston, S.C.

Continuation of application No. 07/408,173, Sep. 15, 1989, abandoned, which is a continuation of application No. 07/038,817, Apr. 15, 1987, Pat. No. 4,953,085. This application Apr. 16, 1991, Appl. No. 686,319.

This patent is subject to a terminal disclaimer

Int. Cl.[6] G06F *17/60*

U.S. Cl. 705—36 **22 Claims**



1. A computer system operating at least one client account at an institution providing financial services or financial processing comprising:

processing means;

memory means connected to said processing means for storing information pertaining to the client accounts(s);

means for maintaining on said computer system data for said client account(s), each of said client accounts comprising at least one asset account having means for receiving funds for investment purposes, said asset account further having means for updating an account balance upon receipt of said funds and at least one liability account including a loan, a condition of which is the periodic payment of a sum of money equal to or in excess of interest charged on the loan;

means for establishing a priority for the allocation of funds to said investment asset account(s) and said liability account(s);

means for using said computer system to allocate funds that are received to pay interest on the loan, and allocate any remaining portion of said payments to one or more of said investment asset account(s) and said liability account(s) other than the loan according to said priority; and

updating the prioritized allocation in accordance with changes to financial and economic variables.

5,911,136

SYSTEM FOR PRIORITIZED OPERATION OF A PERSONAL FINANCIAL ACCOUNT COMPRISING LIABILITIES AND INVESTMENT ASSETS

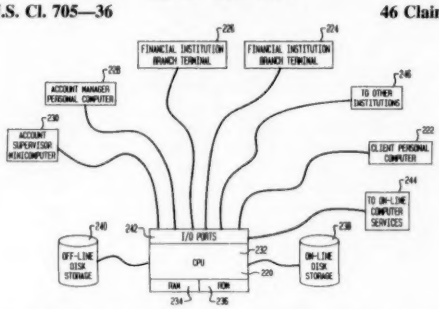
Charles Agee Atkins, Amelia Island, Fla., assignor to Proprietary Financial Products, Inc., Charleston, S.C.

Continuation of application No. 07/750,790, Aug. 27, 1991, abandoned, which is a continuation of application No. 07/686,319, Apr. 16, 1991, which is a continuation of application No. 07/408,173, Sep. 15, 1989, abandoned, which is a continuation of application No. 07/038,817, Apr. 15, 1987, Pat. No. 4,953,085. This application Mar. 26, 1997, Appl. No. 827,111.

This patent is subject to a terminal disclaimer

Int. Cl.[6] G06F *17/60*

U.S. Cl. 705—36 **46 Claims**



1. A computer-based system for operating at least one client financial account comprising:

processing means;

memory means connected to said processing means for storing information pertaining to the financial account(s);

means for storing in a database in said memory means information concerning each financial account, each financial account including at least one investment asset account which receives funds for investment purposes, said asset account having an account balance which is updated by the computer system upon receipt of said funds, and at least one liability account including a loan;

means for determining a customized set of priorities for a preferred allocation of received funds to said investment asset account(s) and said liability account(s)

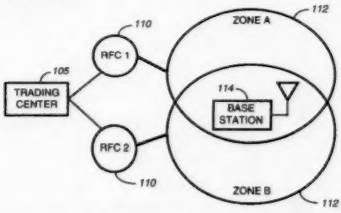
means for allocating said received funds to pay interest on the loan and allocating the remaining portion of said funds to the accounts of the client financial account according to said preferred allocation of said funds; and

updating the preferred allocation in accordance with changes to financial and economic variables.

5,911,137
METHOD AND APPARATUS FOR SHARING A COMMUNICATION SYSTEM

Jyh-Han Lin, Fort Worth; Pavan Jyotsna Achyutuni, North Richland Hills; Sachin Waman Danait, Irving; Alain Charles Louis Briancon, McKinney, and Casey Thomas Hill, Trophy Club, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 15, 1996, Appl. No. 680,737
Int. Cl.[6] G06F *17/60*
U.S. Cl. 705—37 **18 Claims**



1. A communication system including a shared communication medium for providing messages, the communication system comprising:

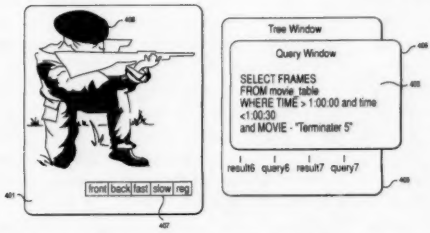
transmission devices for transmitting the messages over the shared communication medium during periods defined by a sharing pattern, the transmission devices comprising means for buying time on the shared communication medium during unassigned periods when the messages are awaiting transmission and for selling time on the shared communication medium during assigned periods when no messages are awaiting transmission; and

a trading center coupled to the transmission devices for modifying the sharing pattern used by the transmission devices in response to traffic handled by the transmission devices.

5,911,138
DATABASE SEARCH FACILITY HAVING IMPROVED USER INTERFACE

Shih-Gong Li, and Bruce Allan Tate, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1993, Appl. No. 72,626
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—3 **21 Claims**



1. A method of searching a database stored on a computer system having a display, comprising the steps of:

concurrently displaying, in respective first, second and third windows of the display:

a first query statement;

a first set of results from a database search of the first query statement;

a symbolic representation of one or more query statements entered during a current query session involving multiple queries including the first query statement; and

linking the respective first, second and third windows such that alteration of given information in one of the windows alters the display of information in at least one of the other windows, wherein the linking step includes the steps of

marking a section of the first set of results in response to user input;

creating a second query statement according to the first query statement and the marked section;

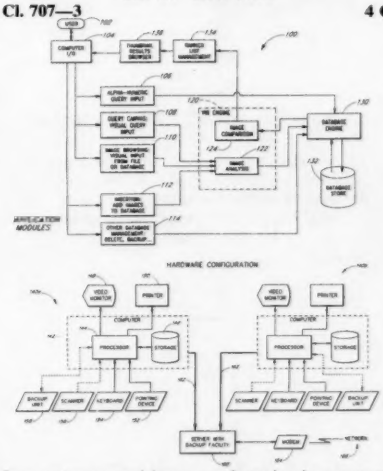
displaying a second set of results from a database search of the second query statement; and

modifying the symbolic representation to include a representation of the second query statement.

5,911,139
VISUAL IMAGE DATABASE SEARCH ENGINE WHICH ALLOWS FOR DIFFERENT SCHEMA

Ramesh Jain, San Diego; Bradley Horowitz; Charles E. Fuller, both of San Mateo; Amarnath Gupta, Redwood City; Jeffrey R. Bach, and Chiao-fe Shu, both of San Mateo, all of Calif., assignors to Virage, Inc., San Mateo, Calif.

Provisional application No. 60/014,893, Mar. 29, 1996. This application Mar. 28, 1997, Appl. No. 828,360.
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—3 **4 Claims**



1. In a system comprising a search engine in communication with a database including a plurality of visual objects, a method of object comparison which allows for different and new schema, wherein a schema is a set of attributes, comprising the steps of:

extracting a first set of attributes from a first visual object;

accessing a second set of attributes from a second visual object, wherein the first set of attributes has different members than the second set of attributes; and

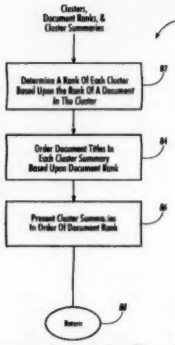
comparing only those attributes common to both of the visual objects.

5,911,140
METHOD OF ORDERING DOCUMENT CLUSTERS GIVEN SOME KNOWLEDGE OF USER INTERESTS

John W. Tukey, Princeton, N.J., and Jan O. Pedersen, Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1995, Appl. No. 572,399
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—5 **14 Claims**

1. A method of browsing a corpus of documents, each document of the corpus having a rank generated in response to a query of a computer user, the method using a processor executing instructions stored in a memory the method comprising the steps of:


Clusters, Document Ranks, & Cluster Summaries
Determine A Rank Of Each Cluster Based Upon the Rank Of A Document In The Cluster
Order Document Titles In Each Cluster Summary Based Upon Document Rank
Present Cluster Summa. ies In Order Of Document Rank
Return

a) ordering the corpus into a plurality of clusters, each cluster including at least one document;

b) determining a rank of each cluster based upon the rank of a one of the documents in the cluster; and

c) presenting the clusters to the computer user in an order based upon cluster rank.

5,911,141

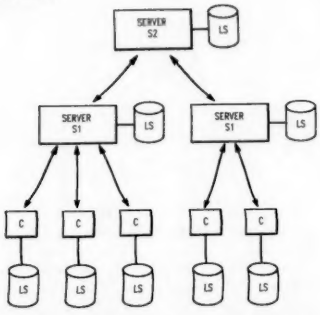
ON-LINE HIERARCHICAL FORM RECORDS IDENTIFICATION

Edward Emile Kelley, Wappingers Falls, and Daniel J. Armbrust, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 7, 1995, Appl. No. 554,881

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—10 **8 Claims**



1. An on-line records identification system further comprising a supplement to an original record, for users working with records in a multiple-level hierarchy, the system comprising:

means for storing and accessing on-line records in a multiple-level hierarchy separately from a central database;

a record origin identifier associated with each record, wherein a unique record origin identifier is assigned to each original record;

a relative identifier associated with each record, wherein a unique relative identifier is assigned to each original record of a single user at a single level of the hierarchy such that the forms of a single user may be organized; and

means for translating the relative identifier is associated with the record at a first level to a relative identifier associated with the record at a second level.

(a) a supplemental identifier is associated with each supplement to an original record of a single user at a single level of the hierarchy, and a unique supplemental identifier is assigned to each supplement to an original record,

(b) the record origin identifier is replicated for each supplement to an original record, and

(c) the relative identifier is replicated for each supplement to an original record, such that different versions of the same form may be stored concurrently.

5,911,142

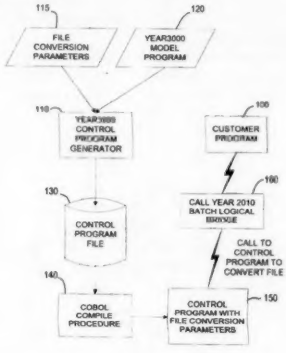
SYSTEM AND METHOD FOR BRIDGING COMPLIANT AND NON-COMPLIANT FILES

Allan Michael Smith, and Thomas L. Durnell, both of Cincinnati, Ohio, assignors to Millennium Dynamics, Inc., Billerica, Mass.

Provisional application No. 60/051,451, Jul. 1, 1997. This application Aug. 5, 1997, Appl. No. 906,344.

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—101 **29 Claims**



1. A method for automatically converting date-related data that is read from, or written into, a data fie under control of a computer program, the method comprising the steps of:

providing a control program including parameters and commands for converting the field length of a data field that corresponds to date-related data;

inserting codes in the computer program file including a subroutine calling command such that the control program will be called and executed as a subroutine from within the computer program file;

executing the computer program file;

creating a temporary data record having at least one data field;

copying the identified date-related data into a data field of the temporary data record; and

executing the control program when the computer program executes the subroutine calling command to automatically converting the field length of the data field of the temporary data record in order to allow either inclusion or exclusion of the century in a portion of the data field indicating the year prior to manipulation of the date-related data stored therein by the computer program.

5,911,143

METHOD AND SYSTEM FOR ADVANCED ROLE-BASED ACCESS CONTROL IN DISTRIBUTED AND CENTRALIZED COMPUTER SYSTEMS

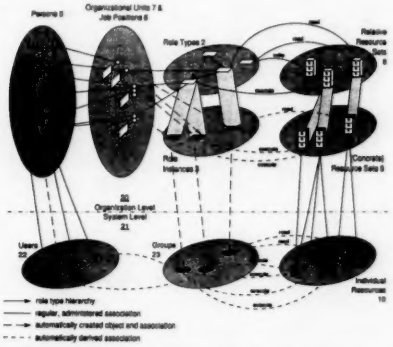
Klaus Deinhart, Renningen, Germany; Virgil Gligor, Chevy Chase, Md.; Christoph Lingenfelder, Walldorf, and Sven Lorenz, Stuttgart, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 14, 1995, Appl. No. 514,710

Claims priority, application Germany, Aug. 15, 1994, 94 112 649

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—103 **11 Claims**



1. A method for controlling access rights of at least one subject on at least one object in a computer system, wherein said subject is associated to at least one role, said method comprising the steps of:

controlling said access rights dependent on a membership of said subject to said role,

controlling said access rights dependent on a parameterized role type,

controlling said access rights dependent on at least one parameterized relative resource set,

representing said role by instantiating role instance by deriving said role instance from said role type,

said step of instantiating said role instance being based on providing a parameter value to said role type, said parameter value further characterizing said subject,

instantiating a concrete resource set by deriving said concrete resource set from said relative resource set,

said step of instantiating said concrete resource set being based on providing said parameter value to said relative resource set,

and providing said object as an element of said concrete resource sets.

5,911,144

METHOD AND APPARATUS FOR OPTIMIZING THE ASSIGNMENT OF HASH VALUES TO NODES RESIDING IN A GARBAGE COLLECTED HEAP

David C. Schwartz, San Jose, and David M. Ungar, Palo Alto, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

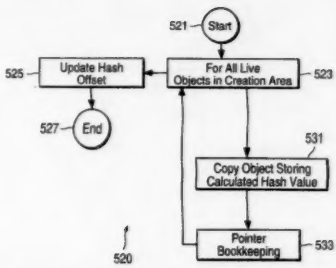
Filed Apr. 23, 1997, Appl. No. 842,140

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—206 **20 Claims**

1. A computer controlled method for generating a hash value for a node allocated from a generational garbage collected heap associated with a global hash offset, wherein said method comprises steps of:

(a) allocating said node within a creation area, said node having a node address;



(b) invoking a generate hash condition; and

(c) determining said hash value from said global hash offset and said node address.

5,911,145

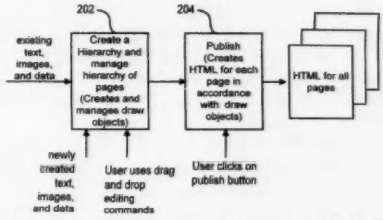
HIERARCHICAL STRUCTURE EDITOR FOR WEB SITES

Samir Arora, San Jose; Gagan Arora, Santa Clara, both of Calif.; Rajagopal Lakshminarayan, Lafayette, Ga.; Gregory Brown, Sumter, S.C.; Martin Fried-Nielsen, Santa Cruz, Calif.; Clement Mok, and David Kleinberg, both of San Francisco, Calif., assignors to RAE Technology, Inc., Redwood City, Calif.

Filed Jul. 29, 1996, Appl. No. 687,971

Int. Cl.[6] G06T *3/00*

U.S. Cl. 707—514 **48 Claims**


202
204
existing text, images, and data
Create a Hierarchy and manage hierarchy of pages (Creates and manages draw objects)
Publish (Creates HTML for each page in accordance with draw objects)
HTML for all pages
newly created text, images, and data
User uses drag and drop editing commands
User clicks on publish button

1. A method of allowing a user to define a World Wide Web site having a plurality of pages with a hierarchical organization comprising the steps, performed by a data processing system, of:

displaying a hierarchical representation of icons, wherein the hierarchy of the page icons reflects the hierarchical organization of the pages;

receiving an indication that the user has added an icon to the screen display, the icon representing a new page at a position in the hierarchical organization; and

altering at least one link in the hierarchical organization of the World Wide Web site to add the new page to the Word Wide Web site in accordance with the position of the new page in the hierarchical organization.

5,911,146

APPARATUS AND METHOD FOR AUTOMATIC YELLOW PAGES PAGINATION AND LAYOUT

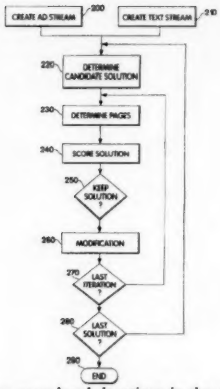
Ramesh Johari, Elk Grove, Ill.; Joseph Marks, Belmont, Mass.; Ali Partovi, Cambridge, Mass., and Stuart Merrill Shieber, Cambridge, Mass., assignors to Mitsubishi Electric Information Technology Center America, Inc. (ITA), Cambridge, Mass.

Filed May 3, 1996, Appl. No. 646,740

Int. Cl.[6] G06T *15/00*

U.S. Cl. 707—525 **12 Claims**

1. A method for determining pagination and a layout of pages having a stream of ordered advertisements of specified sizes and a stream of text, the method comprising the steps of:



randomly setting page break locations in the stream of ordered advertisement;

randomly placing the advertisements on each page;

placing text in spaces between advertisements on each page; and

randomly adjusting at least one of a page break location and placement of an advertisement on a page.

5,911,147

ADDRESS CONTROLLER FOR APPARATUS WITH PLURAL EXTERNAL MEMORY SLOTS

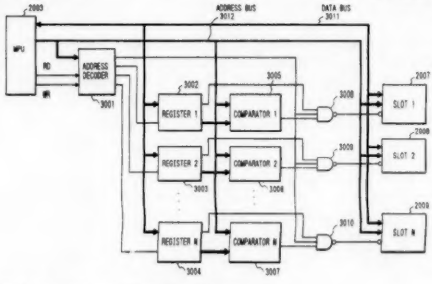
Ken Onodera, Yokohama, and Masahiko Murata, Tama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1995, Appl. No. 570,734

Claims priority, application Japan, Dec. 13, 1994, 6-332518

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—5 **24 Claims**



1. A control apparatus comprising:

a plurality of slot means each for connecting an external memory to said control apparatus;

access means for accessing an external memory connected by one of said plurality of slot means to read identification information stored in the external memory;

determination means for determining whether or not data that rely on an address are stored in the external memory, based on the identification information stored in the external memory connected by said one slot means; and

address setting means for setting an address of the external memory connected by said one slot means at which said access means accesses that external memory in accordance with a determination made by said determination means.

5,911,148

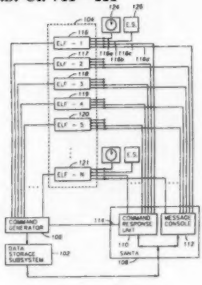
AUTOMATED MESSAGE PROCESSING SYSTEM CONFIGURED FOR AUTOMATED TAPE DEVICE MANAGEMENT

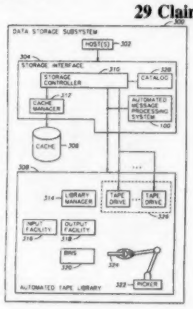
Matthew Joseph Anglin, Vail, and Gregory Tad Kishi, Oro Valley, both of Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1997, Appl. No. 865,444

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—111 **29 Claims**





1. A method of monitoring allocation of storage drives in a data storage subsystem that includes:

a storage controller;

a library including multiple storage drives to access removable media, said library including multiple items of said removable media and a library manager coupled to the storage controller; and

an automated storage administrator coupled to the library manager and the storage controller, said automated storage administrator including:

a plurality of expert local facilities (ELFs), each ELF performing predetermined actions responsive to each message routed thereto;

a message director to receive input messages from the storage controller and library manager and route each of the received input messages to at least one ELF;

a command generator to receive output messages from the ELFs, place the output messages into a predetermined format and dispatch the formatted output messages to a destination including at least one of the storage controller and the library manager;

wherein said method comprises:

allocating the drives between the storage controller and the library manager;

the automated storage administrator receiving a message including a request to re-allocate the drives among the storage controller and the library manager;

the message director routing the received message to a first one of the ELFs;

the first ELF, in response to the routed message, performing the predetermined actions associated with the ELF, said predetermined actions including generation of an output message summarizing the requested re-allocation of the drives among the storage controller and the library manager;

the command generator modifying the output message into a predetermined format to create a formatted output message;

selecting a destination in the data storage subsystem from a group including: the library manager and the storage controller; and

the command generator dispatching the formatted output message to the selected destination.

5,911,149

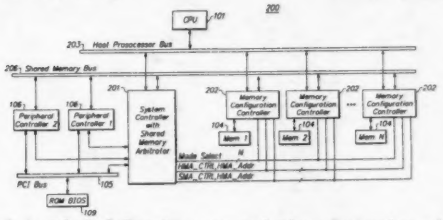
APPARATUS AND METHOD FOR IMPLEMENTING A PROGRAMMABLE SHARED MEMORY WITH DUAL BUS ARCHITECTURE

Chung-Chen Luan, Saratoga; Siu-Ming Chong, Fremont; James H. Wang, San Jose; John Wong, Oakland, and Gong-Jong Yeh, San Jose, all of Calif., assignors to NEC Electronics Inc., Santa Clara, Calif.

Filed Nov. 1, 1996, Appl. No. 742,339

Int. Cl.[6] G06F *12/00;13/20;13/36*

U.S. Cl. 711—147 **11 Claims**



1. A method of allocating a memory having a first portion and a second portion each of said first and second portions alternatively connectable to one from the group of a processor bus and a peripheral bus in a computer system having a processor and a peripheral, the method comprising the steps of:

receiving a memory configuration request by a system controller;

dedicating a first portion of the memory to the processor using a first memory configuration controller, the first memory configuration controller coupled to the system controller, to the processor bus, to the peripheral bus and the memory for selectively coupling the memory to one of the peripheral bus and the processor bus responsive to a stored memory configuration, the first memory configuration controller having a data multiplexer having a first port coupled to the peripheral bus and a second port coupled to the processor bus and a third port coupled to a memory data path for selectively coupling the third port to one of the first and second ports responsive to control signals received from the system controller, the first portion of the memory being determined from the configuration request; and

allocating a second portion of the memory to shared use by the processor and the peripheral using a second memory configuration controller, the second portion being determined from the configuration request, the second memory configuration controller coupled to the system controller, to the processor bus, to the peripheral bus and the second portion of memory for selectively coupling the memory to one of the peripheral bus and the processor bus responsive to a stored memory configuration, the second memory configuration controller having a second data multiplexer having a first port coupled to the peripheral bus and a second port coupled to the processor bus and a third port coupled to a memory data path for selectively coupling the third port to one of the first and second ports responsive to control signals received from the system controller.

5,911,150

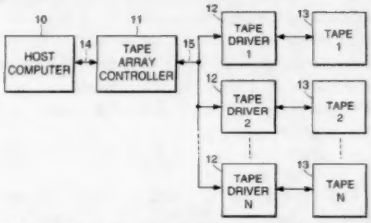
DATA STORAGE TAPE BACK-UP FOR DATA PROCESSING SYSTEMS USING A SINGLE DRIVER INTERFACE UNIT

Gary S. Peterson, Westboro; Matthew M. Brennan, Leicester, both of Mass., and Robert Decrescenzo, Riverside, R.I., assignors to Data General Corporation, Westboro, Mass.

Continuation of application No. 08/186,687, Jan. 25, 1994, abandoned. This application Oct. 3, 1996, Appl. No. 724,966.

Int. Cl.[6] G06F *12/16*

U.S. Cl. 711—162 **28 Claims**



1. A method for backing-up data of a processing system, comprising the steps of:

providing a data storage back-up sub-system including a single tape driver interface unit being interconnected to the processing system by a first SCSI bus and having a process controller that is interconnected to an array of N tape drive units by a second SCSI bus;

transmitting processing system data to be backed-up to the single tape driver interface unit over the first SCSI bus;

configuring the process controller so as to control the access to the N tape drive units and X data storage tapes used therewith such that the transmitted system data is written into storage regions of the X data storage tape tapes in one of at least one pre-specified operating modes, where $X \leq N$;

writing the transmitted data from the single tape driver interface unit into the tape storage regions via the second SCSI bus and the tape drive units;

reading data from the storage regions of the X data storage tapes to the single tape driver interface unit via the second SCSI bus; and

transmitting the retrieved data from the single tape driver interface unit to the processing system via said first SCSI bus, so the back-up data transmitted by the processing system is returned to the processing system.

5,911,151

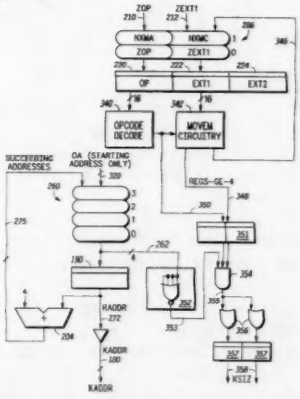
OPTIMIZING BLOCK-SIZED OPERAND MOVEMENT UTILIZING STANDARD INSTRUCTIONS

Joseph C. Circello, Phoenix, Ariz.; James N. Hardage, Jr., Kyle, and Glen A. Harris, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 10, 1996, Appl. No. 630,152

Int. Cl.[6] G06F *13/28*

U.S. Cl. 711—201 **19 Claims**



1. A method of optimizing a data transfer utilizing a standard instruction, said method comprising the steps of:

a) identifying an OP code that corresponds to the standard instruction requiring the data transfer;

b) reading a field of the standard instruction to identify a set of registers containing data to be transferred and dynamically determining when at least a block sized number of bytes from the set of registers still need to be transferred during operation of the standard instruction;

c) dynamically determining when an operand memory address is on a block boundary; and

d) selectively designating that a data transfer be performed in an optimized manner when:

step (a) has identified the OP code that corresponds to the standard instruction requiring the data transfer,

step (b) has dynamically determined that at least the block sized number of bytes still need to be transferred, and

step (c) has dynamically determined that the operand memory address is on the block boundary.

5,911,152

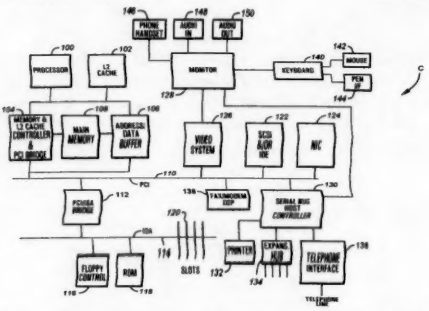
COMPUTER SYSTEM AND METHOD FOR STORING DATA IN A BUFFER WHICH CROSSES PAGE BOUNDARIES UTILIZING BEGINNING AND ENDING BUFFER POINTERS

David R. Wooten, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Provisional application No. 60/003,190, Sep. 5, 1995, Provisional application No. 60/003,191, Sep. 5, 1995. This application Sep. 5, 1996, Appl. No. 711,357.

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—208 **22 Claims**



1. A memory for storing pages of data for access by an application program being executed on a computer system, said pages of data having a plurality of data locations, the memory comprising:

a data structure stored in said memory for identifying said pages of data, including:

a beginning buffer pointer having a page address portion and a base address portion, the base address portion being changeable each time one of the data locations is accessed; and

an ending buffer pointer having a page address portion and a base address portion,

wherein the page address portion of said beginning buffer pointer is replaced with the page address portion of said ending buffer pointer if the base address portion of said beginning buffer pointer has reached a page boundary of a current page.

5,911,153

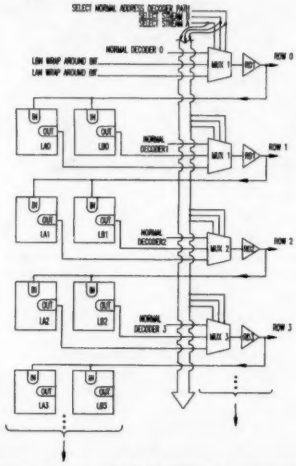
MEMORY DESIGN WHICH FACILITATES INCREMENTAL FETCH AND STORE REQUESTS OFF APPLIED BASE ADDRESS REQUESTS

Sang Hoo Dhong, Austin, Tex.; Philip George Emma, Danbury, Conn.; William Robert Reohr, Pleasantville, N.Y., and Joel Abraham Silberman, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1996, Appl. No. 724,878

Int. Cl.[6] G06F *12/06*

U.S. Cl. 711—218 **12 Claims**



1. A memory system which facilitates incremental fetch and store requests off an applied base address request comprising:

means for inputting to a memory a request for data to be stored beginning at an applied base address;

means for storing a plurality of data blocks;

means for inputting to the memory a request for data to be retrieved beginning at an applied base address;

means for retrieving a plurality of data blocks; and

means for storing a decoded version of an entire applied base address and incrementally generating addresses with a predetermined stride to retrieve and store data blocks off that same applied base address in later memory cycles.

5,911,154

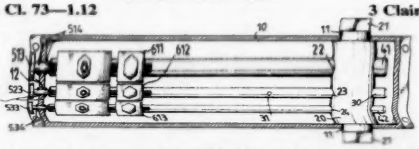
WRENCH TORQUE VALUE CALIBRATING APPARATUS

Chih-Ching Hsieh, No. 64, Lane 107, Liang Tsun Rd., Fong Yuan City, Taichung Hsien, Taiwan

Filed Oct. 30, 1997, Appl. No. 961,250

Int. Cl.[6] G01C 17/38

U.S. Cl. 73—1.12 **3 Claims**



1. A wrench torque value calibrating apparatus of the type comprising: a casing having a fixed block longitudinally disposed on a bottom wall of a top side thereof; an actuating member revolvably supported on said casing and having at least one polygonal end block extended out of said casing for turning with the torque wrench to be calibrated; a sliding block coupled to said fixed block of said casing and moved longitudinally along it, said sliding block having a top side coupled to said fixed block of said casing and a bottom side mounted with a roller; a flexible main rod having a first end perpendicularly connected to said actuating

member and a second end stopped below the roller of said sliding block; and a torque meter mounted on said casing and having a probe perpendicularly disposed in contact with said flexible main rod, said flexible main rod being bent in one direction to lift said probe when said actuating member is turned with the wrench to be calibrated, causing said torque meter to show the set torque value of the wrench to be calibrated; wherein at least one auxiliary fixed block is longitudinally mounted inside said casing; at least one auxiliary sliding block is respectively coupled to said at least one auxiliary fixed block inside said casing, each of said at least one auxiliary sliding block having a top side coupled to the corresponding auxiliary fixed block and a bottom side mounted with a roller; at least one adjustment screw rod is mounted in a respective hole on said casing and respectively connected to said at least one auxiliary sliding block by a screw joint, said at least one adjustment screw rod being turned to move said at least one auxiliary sliding block along said at least one auxiliary fixed block respectively; and at least one flexible auxiliary rod is mounted inside said casing in parallel to said flexible main rod and coupled to said actuating member, said at least one flexible auxiliary rod having a greater flexibility than said flexible main rod, each of said at least one flexible auxiliary rod having a first end perpendicularly connected to said actuating member and a second end stopped below the roller of one auxiliary sliding block.

5,911,155

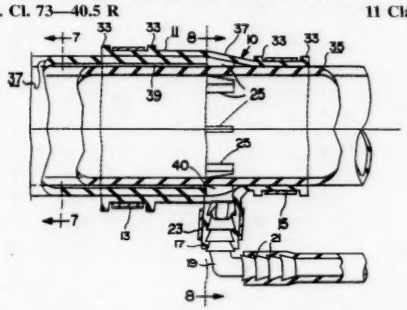
CONNECTING DEVICE FOR PIPE ASSEMBLIES

Michael C. Webb, Chester Springs, Pa., assignor to Environ Products, Inc., Exton, Pa.

Continuation of application No. 08/340,709, Nov. 16, 1994, abandoned, which is a division of application No. 07/923,831, Aug. 3, 1992, Pat. No. 5,398,976. This application Apr. 17, 1996, Appl. No. 634,014.

Int. Cl.[6] G01M *3/28;* **F16L** *9/18;41/02;* **F17D** *1/04*

U.S. Cl. 73—40.5 R **11 Claims**



5. A method of monitoring the integrity of a double wall pipe system comprising a plurality of double wall pipe segments, each pipe segment having an inner pipe with an outer wall, and outer pipe with an inner wall, and an interstitial space free from solid filler material disposed between said walls, to provide an alarm in the event of a leak in either pipe wall, comprising the steps of:

connecting the inner pipes of each said double wall pipe segment to form a closed system for conveying a fluid using a pump to thereby create a positive pumping pressure in said inner pipes;

sealing the interstitial space between said walls by connecting each end of each double wall pipe to a boot sealed at one end to the outer pipe and at the other end to the inner pipe and having an annular chamber between said ends communicating with said interstitial space;

connecting each adjacent boot between said double wall pipe segments to provide a closed system of said interstitial space;

transferring liquid by sensor tube means to provide a quantity of liquid in said interstitial region, said sensor tube means including a level positioning means for locating the level of liquid in said tube with respect to a fixed point; and

detecting changes in the level of liquid in said sensor tube means beyond the predetermined limits.

5,911,156

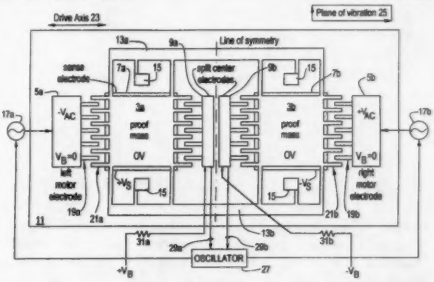
SPLIT ELECTRODE TO MINIMIZE CHARGE TRANSIENTS, MOTOR AMPLITUDE MISMATCH ERRORS, AND SENSITIVITY TO VERTICAL TRANSLATION IN TUNING FORK GYROS AND OTHER DEVICES

Paul A. Ward, Roslindale; Eric M. Hildebrant, Watertown; Lance C. Niles, Salem; Marc S. Weinberg, Needham, and Anthony S. Kourepenis, Acton, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Feb. 24, 1997, Appl. No. 805,013

Int. Cl.[6] G01C *19/00*

U.S. Cl. 73—504.16 **3 Claims**



1. A micromechanical tuning fork gyroscope for measuring an inertial input, comprising:

a substrate;

first and second sense electrodes disposed symmetrically on said substrate;

at least first and second proof masses disposed over said first and second sense electrodes, respectively, said first and second proof masses having comb electrodes extended from respective inner and outer sides thereof;

first and second motor electrodes disposed symmetrically on said substrate, said first and second motor electrodes having comb electrodes, said comb electrodes of said first and second motor electrodes interleaved with the outer side comb electrodes of said first and second proof masses, respectively; and

first and second oppositely biased center electrodes disposed symmetrically on said substrate, said first and second center electrodes having comb electrodes at least one of said center electrodes comb electrodes being interleaved with innerside comb electrodes of said first proof mass and providing a feedback signal indicative of velocity of said first proof mass.

5,911,157

TUNNEL EFFECT SENSOR

Markus Biebl, Augsburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE95/00020, § 371 Date Jul. 17, 1996, § 102(e) Date Jul. 17, 1996, PCT Pub. No. WO95/19571, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 10, 1995, Appl. No. 676,198

Claims priority, application Germany, Jan. 18, 1994, 44 01 303

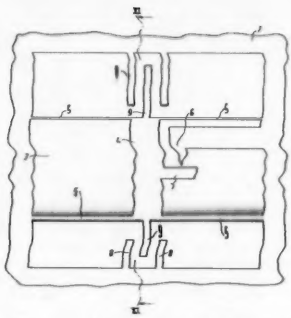
Int. Cl.[6] G01P *1/02*

U.S. Cl. 73—514.16 ***10 Claims***

1. Tunnel effect sensor having a substrate, comprising:

a mass part, movable on springs, the mass part being a sensor layer and being movable parallel to a surface of the substrate;

a tapering tunnel electrode and a cooperating electrode lying opposite one another in a plane of said sensor layer, the springs also being in the plane of the sensor layer;



only one of said tunnel electrode and said cooperating electrode *arranged at the mass part; and*

compensation electrodes that are arranged such that the mass part can be held in a predetermined position by an electrical voltage *applied to said compensation electrodes.*

5,911,158

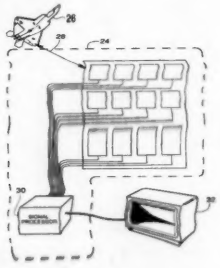
PIEZOELECTRIC STRAIN SENSOR ARRAY

Douglas A. Henderson, *Dayton*; *Robert W. Gordon, Vandalia*; Joseph W. Hollkamp, *Fairborn*, all of *Ohio*, and *Gregory S.* Agnes, *Christiansburg*, Va., assignors to The United States of America as represented by the Secretary of the Air Force, *Washington, D.C.*

Provisional application No. 60/012,559, Feb. 29, 1996. This application Feb. 28, 1997, Appl. No. 808,365.

Int. Cl.*[6] *G01H 11/08; G01N 29/12

U.S. Cl. 73—583 **3 Claims**



3. A method for determining the dynamic response of a physical structure, comprising the steps of:

(a) bonding to a surface of the physical structure a piezoelectric *strain sensor array, the strain sensor array including:*

(i) a sheet of piezoelectric polymer film, the sheet having a first side and a second side;

(ii) a contiguous first layer of conductive film on the first side of the sheet forming a first electrode;

(iii) a non-contiguous second layer of conductive film on the second side of the sheet, the non-contiguous areas of the *second layer forming an array of discrete second electrodes* defining a corresponding array of discrete piezoelectric transducers, and,

(iv) a plurality of sensor leads, each sensor lead connected in parallel with the other sensor leads to a single corresponding second electrode, wherein each single corresponding *second electrode is connected to only one sensor lead; and,*

(b) connecting the sensor leads to a signal processor for receiving and processing electrical signals received from the array of discrete piezoelectric transducers, the signal processor including associated software for determining from the processed electrical signals relative strain amplitudes of a surface area of the physical structure onto which the sheet is attached.

5,911,159

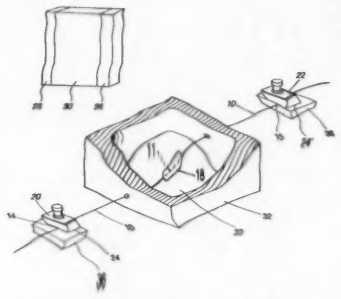
RESIN CURE MONITORING

Vincent K. Choo, Las Cruces, and *Manuel V. Gomez, Derry*, both of N. Mex., assignors to New Mexico State University Technology Transfer Corporation, Las Cruces, N. Mex.

Provisional application No. 60/030,732, Nov. 7, 1996. This application Nov. 5, 1997, Appl. No. 964,593.

Int. Cl.*[6] *G01H 3/00

U.S. Cl. 73—590 **24 Claims**



1. *A method of monitoring the curing of a resin comprising:*

disposing a flexible waveguide, fashioned from a plurality of bundled fibers, between two points;

surrounding an intermediate segment of the waveguide with resin;

allowing the resin to penetrate into interstitial voids between *and among the fibers:*

allowing the resin to begin curing;

propagating at least one acoustic wave through the waveguide while the resin is curing; and

monitoring the acoustic wave.

5,911,160

ULTRASOUND DIAGNOSTIC APPARATUS

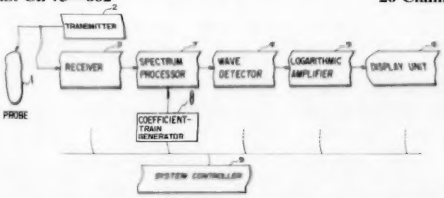
Yasuhiko Abe, and Ryoichi Kanda, both of Otawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1996, Appl. No. 777,281

Claims priority, application Japan, Dec. 27, 1995, 7-341798

Int. Cl.*[6] *G01N 29/00

U.S. Cl. 73—602 **20 Claims**



1. A method for reconstructing an image based on echo signals, comprising the steps of:

transmitting ultrasound to a subject through an ultrasound probe to receive echo signals from said subject;

generating coefficient trains based on the reflection depth of the ultrasound;

filtering the echo signals based on the coefficient trains to correct a spectrum of the ultrasound; and

detecting and logarithmic-amplifying the filtered echo signals to obtain an ultrasound image.

5,911,161

APPARATUS AND METHOD FOR BINOCULAR MEASUREMENT SYSTEM

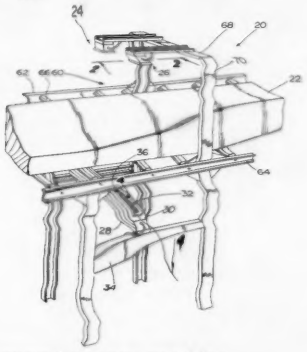
David E. Harris, Powell, Ohio, assignor to Harris Instrument Corporation

Continuation of application No. 08/651,965, May 21, 1996, which is a continuation of application No. 08/301,352, Sep. 6, 1994, Pat. No. 5,546,808. This application Sep. 22, 1997, Appl. No. 934,984.

This patent is subject to a terminal disclaimer

Int. Cl.[6] G01N 21/00

U.S. Cl. 73—618 7 Claims



1. A measurement apparatus, comprising:

at least two discrete electromagnetic radiation emitting devices, said devices located a distance from a first surface of a material workpiece, and extending partially outwardly from an edge of said work-piece, each of said devices being responsive to the application of current thereto to emit radiation;

a first receiver responsive to radiation emitting from said devices, said first receiver located a stand-off distance from a second surface of said material;

a second receiver responsive to radiation emitting from said devices and located a stand-off distance from said second surface of said workpiece;

a drive circuit for applying said current to said discrete radiation emitting devices for sequentially actuating each of said emitting devices; and

a processor for receiving first receiver signals from said first receiver and for receiving second receiver signals from said second receiver, said processor adapted to process said first receiver signals with respect to said second receiver signals.

5,911,162

CAPACITIVE PRESSURE TRANSDUCER WITH IMPROVED ELECTRODE SUPPORT

John A. Denner, Lynn, Mass., assignor to MKS Instruments, Inc., Andover, Mass.

Filed Jun. 20, 1997, Appl. No. 880,035

Int. Cl.[6] G01L 9/12

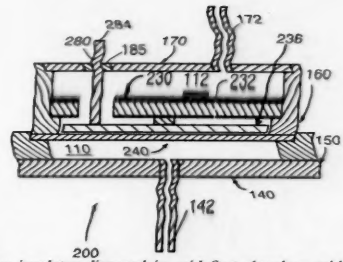
U.S. Cl. 73—718 34 Claims

1. A pressure transducer assembly comprising:

(A) a body defining an interior cavity;

(B) a diaphragm mounted in said body and dividing said interior cavity into a first chamber and a second chamber, a portion of said diaphragm flexing in a first direction in response to a pressure in said first chamber being higher than a pressure in said second chamber, said portion of said diaphragm flexing in a second direction opposite said first direction in response to said pressure in said second chamber being higher than said pressure in said first chamber;

(C) a plate, said plate being fixed to said body in said first chamber;



(D) an insulator disposed in said first chamber, said insulator being fixed to said plate, a first portion of said plate overlying a first portion of said insulator, said first portion of said plate being spaced apart from said first portion of said insulator;

(E) a conductor disposed on said insulator, said conductor and said diaphragm being characterized by a capacitance, said capacitance being representative of a difference between said pressures in said first and second chambers.

5,911,163

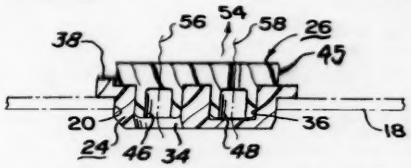
DUAL MODE VENT PLUG ASSEMBLY FOR AN ENCLOSED HOUSING

Walter J. Ferguson, Waterbury, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of application No. 08/439,727, May 12, 1995. This application Oct. 28, 1997, Appl. No. 959,603.

Int. Cl.[6] G01L 19/06

U.S. Cl. 73—738 9 Claims



1. A vent plug assembly for relieving fluid pressure from within an enclosed instrument casing comprising:

a body adapted to be installed in a secured relation within an aperture defined in the casing of the instrument with which said vent plug assembly is to be utilized, said body including at least one transversely extending thru-bore and at least one blind recess inwardly extending parallel and at a location removed from said thru-bore, with said thru-bore and said recess being of like sectional configuration and dimension;

a removable plug defining a top plate having at least a pair of dependent stubs of like spacing and sectional configuration as the thru-bore and recess of said body with one of said stubs being blind to fluid flow and the other of said stubs defining a thru-bore for communicating fluid flow; and

said plug being interchangeably insertable selectively onto said body with either the one of said stubs or the other of said stubs received in the thru-bore of said body.

5,911,164

COMPACTION AND PAVEMENT DESIGN TESTING MACHINE AND METHOD FOR TESTING FLEXIBLE PAVEMENT MATERIALS

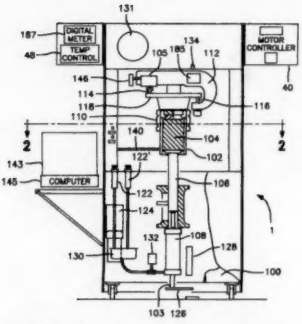
John L. McRae, 416 Groome Dr., Vicksburg, Miss. 39180

Filed Feb. 10, 1998, Appl. No. 21,373

Int. Cl.[6] G01N 3/00

U.S. Cl. 73—815 25 Claims

1. A material testing apparatus for testing samples of flexible pavement materials, said materials testing apparatus comprising:



a mold for holding the sample of paving material;

a compactor extending into said mold and capable of compacting said sample when said sample is located within said mold;

a floating mechanism for compacting said sample of paving material by a gyratory kneading of the paving material while at the same time measuring a shearing resistance of the paving material to dilation and collapse with minimal breakage of aggregate, said mechanism including a mold chuck floating on the sample so that gyration of the mold chuck reflects development of instability by direct response in terms of shearing resistance, as defined by progressive reduction in said force applied by said sample against said mechanism during compaction, and in terms of excess plasticity, as defined by progressive increase in gyratory angle during compaction and kneading to indicate a condition of instability during the compaction for identification of maximum permissible bitumen content of the sample under design stress conditions;

a heater mechanism and temperature controller for heating the sample to simulate thermal conditions experienced during in-field placement of the material by initially elevating the temperature of the sample to an initial temperature measured immediately behind a paving machine and said temperature controller permitting cooling of the sample during compaction to a temperature measured during field use;

a controller and data acquisition system including:

a first sensor responsive to a force applied by said sample against said mechanism during compaction;

a second sensor responsive to a gyratory angle achieved by said mechanism in response to compaction and kneading of said sample;

a third sensor responsive to a height of said sample as compacted by said compactor;

a computer responsive to said first, second and third sensors, said computer being programmed to sample output signals from said first, second, and third sensors during compaction and kneading of said sample and being further programmed to register data indicative of the force applied by said sample against the mechanism, indicative of said gyratory angle, and also indicative of said height,

said computer being further programmed to automatically terminate testing of a sample in response to detecting satisfaction of at least one termination criterion, said computer being further programmed to accept data indicative of said at least one termination criterion from a user, said at least one criterion being selected from a group of criteria including

equilibrium of the sample as determined based on a rate-of-change in sample density;

a predetermined density of the sample;

a predetermined height of the sample; and

occurrence of a predetermined number of revolutions of said mechanism, and

said computer being further programmed to respond to predetermined user inputs by varying a rate of shear of the sample and by varying the temperature of the sample so as to accurately reflect viscosity and strength variations in the sample as a result of the use of additives which are intended to enhance the quality of the sample being tested.

5,911,165

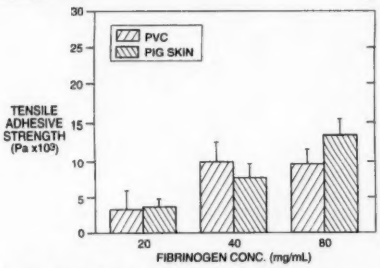
METHOD AND DEVICE FOR MECHANICAL TESTING OF FIBRIN GLUE STRENGTH

John W. Guo, El Cerrito, and Rajiv Nayar, Richmond, both of Calif., assignors to Bayer Corporation, Berkeley, Calif.

Filed May 29, 1997, Appl. No. 864,797

Int. Cl.[6] G01N *3/24*

U.S. Cl. 73—827 **2 Claims**



1. In a method of testing the strength of a fibrin clot comprising the steps of forming a fibrin clot between a first substrate material and a second substrate material, wherein at least one of said first and second substrate materials comprises animal skin, and measuring the force required to separate the first substrate material from the second substrate material,

the improvement wherein the animal skin is replaced with a substrate which comprises polyvinyl chloride, wherein the tensile strength of the fibrin clot as measured using the polyvinyl chloride film is substantially similar in magnitude to the tensile strength of the fibrin clot as measured using animal skin.

5,911,166

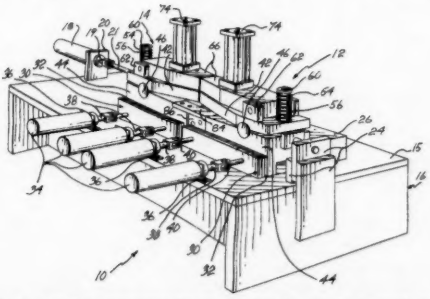
TENSILE STRENGTH TESTER WITH CLAMPING LOAD APPLICATION CONTROL

Wavell F. Cowan, HCR 34 Box 45, Montpelier, Vt. 05602

Filed Sep. 3, 1997, Appl. No. 922,316

Int. Cl.[6] G01N *3/04*

U.S. Cl. 73—833 **20 Claims**



1. In a testing apparatus for measuring the tensile strength of a flat sheet of material wherein the flat sheet is clamped at separate locations and tensile force is applied to the flat sheet comprising pairs of clamping jaw assemblies, each such clamping jaw assembly including first and second jaw members having respective clamping surfaces adapted to receive and clamp the flat sheet of material at adjacent points of contact, pressure means to apply a load for closing said first and second jaw members in a clamped position, load concentrating means associated with said pressure

means, said load concentrating means being in contact with at least one of said first and second jaw members at a location which is intersected by an axis which is perpendicular to the clamping surfaces in said clamped position and which passes through said clamping surfaces at the points of contact with said flat sheet for transferring the load to said first and second jaw members along said axis, said load concentrating means including first and second load bars which are respectively disposed on a surface of said first and second jaw members opposite to said clamping surfaces thereof, said first and second load bars being provided with respective load application portion which respectively protrude from said first and second load bars towards said first and second jaw members at said locations for transferring the load developed by said pressure means to said first and second jaw members into direct compression forces at said clamping surfaces.

5,911,167

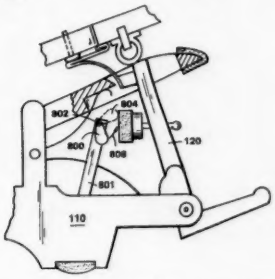
PIANO ESCAPEMENT ACTION

Scott Jones, Port Washington, N.Y., and Stefan Knupfer, Hamburg, Germany, assignors to Steinway, Inc., Waltham, Mass.

Continuation of application No. 08/616,656, Mar. 15, 1996, abandoned, which is a continuation-in-part of application No. 08/341,521, Nov. 17, 1994, Pat. No. 5,511,454. This application Mar. 12, 1997, Appl. No. 816,208.

Int. Cl.[6] G10C *3/18*

U.S. Cl. 84—236 **20 Claims**



20. An escapement action for a piano, comprising:

a hammershank having a first end mounted to pivot relative to the piano and a second end carrying a hammer to strike a tensioned string of the piano, said hammershank comprising a knuckle disposed therealong between said first and said second end;

a repetition support bearing against a key of the piano and mounted to pivot relative to the piano in response to depression of the key;

a jack pivotally connected to said repetition support and defining a jack surface disposed for engagement with a knuckle surface of said knuckle, said jack arranged for escape of said jack surface from engagement with said knuckle surface during depression of said key;

a spring urging said jack toward an "at rest" position with said jack surface in engagement with said knuckle surface; and

a jack retainer assembly disposed on said hammershank between said second end and said knuckle, said jack retainer assembly including an adjustment means acting between said jack retainer and said knuckle for positioning said jack retainer relative to said knuckle.

5,911,168

NECK CONNECTION FOR A STRINGED INSTRUMENT MADE IN ONE PIECE, AND METHOD FOR THE PRODUCTION THEREOF

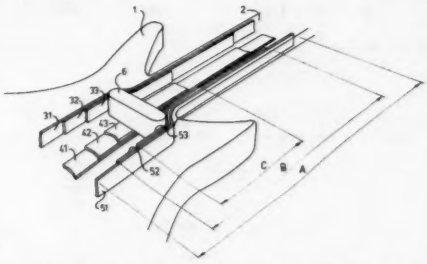
Anton Rudolf Enserink, Wassenaar, Netherlands, assignor to Catalyst Corporate Development B.V., Delft, Netherlands

PCT No. PCT/NL95/00178, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/32494, PCT Pub. Date Nov. 30, 1995

PCT Filed May 23, 1995, Appl. No. 737,790

Int. Cl.[6] G10D *3/00*

U.S. Cl. 84—291 **15 Claims**



1. A stringed instrument, comprising at least a body and a neck both the neck and the body being made of plastic, wherein the body (**1**) and the neck (**2**) are in one piece and the neck connection comprises at least bottom fibre structures (**41**, **42**, **43**) and side fibre structures (**31**, **32**, **33**; **51**, **52**, **53**) moulded into the plastic, which fibre structures (**41**, **42**, **43**) and side fibre structures (**31**, **32**, **33**; **51**, **52**, **53**) extend both in the neck (**2**) and in the body (**1**), whereby the neck is rooted in the body by said fibre structures.

5,911,169

RECORDING SENSOR MOUNTING RAIL FOR KEYBOARD OPERATED MUSICAL INSTRUMENT

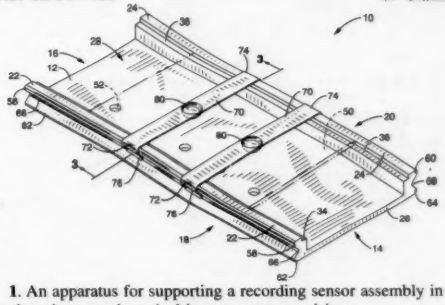
Donald Lichtenstein, Orangevale, Calif., assignor to Burgett, Inc., Sacramento, Calif.

Filed Oct. 15, 1996, Appl. No. 730,419

This patent is subject to a terminal disclaimer

Int. Cl.[6] G10G *3/00*

U.S. Cl. 84—461 **19 Claims**



1. An apparatus for supporting a recording sensor assembly in a keyboard operated musical instrument, comprising:

(a) an elongated mounting rail, said mounting rail having first and second ends;

(b) said mounting rail including first and second spaced apart elongated flanges extending longitudinally between said first and second ends of said mounting rail, said first and second flanges defining an elongated channel therebetween;

(c) each said flange including an elongated inner shelf and a first outward facing lip;

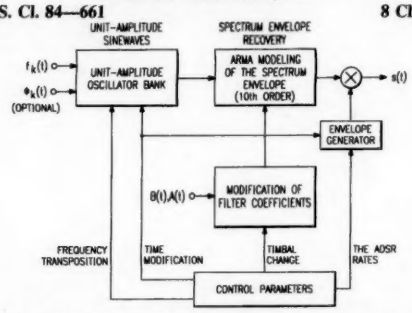
(d) at least one clip member, said clip member including a pair of prongs, said prongs structured and configured to fit over said outward facing lips; and

(e) a protrusion located between said pair of prongs said protrusion structured and configured to engage a hole or bore on a circuit board.

5,911,170
SYNTHESIS OF ACOUSTIC WAVEFORMS BASED ON PARAMETRIC MODELING

Yinong Ding, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Provisional application No. 60/039,580, Feb. 28, 1997. This application Feb. 27, 1998, Appl. No. 31,808.
Int. Cl.[6] G10H *1/057;1/12*
U.S. Cl. 84—661 **8 Claims**



1. A method of synthesizing an acoustic waveform modeled as a sum of sinusoids with time-varying amplitudes and frequencies, comprising:

generating a flat spectrum signal comprising a sum of constant amplitude sinusoids with time-varying frequencies using a cubic phase interpolation algorithm with frequency parameter inputs f_k (t) derived from DFT-based analysis of sampled waveform data;

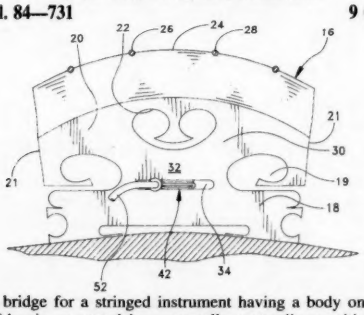
generating a weighted spectrum signal comprising a sum of time-varying relative magnitudes of different frequency components by filtering the flat spectrum signal using an autoregressive moving average (ARMA) filter whose inputs B(t), A(t) are derived from spectrum envelope shape analysis of the sampled waveform data; and

applying an overall time-varying amplitude envelope to the weighted spectrum signal.

5,911,171
PICKUP SYSTEM FOR BRIDGE OF STRINGED MUSICAL INSTRUMENT

Ka Hei Wong, 101 Grassy Plain Rd., East Providence, R.I. 02915

Filed Mar. 13, 1998, Appl. No. 39,343
Int. Cl.[6] G10D *1/02;3/04;* **G10H** *3/18*
U.S. Cl. 84—731 **9 Claims**

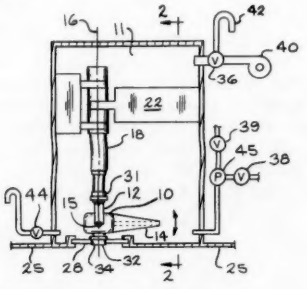


6. A bridge for a stringed instrument having a body on which said bridge is supported in a generally upstanding position, said bridge including a planar body including an upper surface for supporting the instrument strings and opposed side surfaces each in turn including inwardly extending side openings laterally spaced from each other so as to define a central bridge area between said side openings, a laterally extending centrally disposed slotted opening disposed in said central bridge area and having opposed facing upper and lower opening defining surfaces, said slotted opening adapted to frictionally receive a pickup device including a piezo electric sensing element such that said pickup device may be adjustably laterally and forwardly and rearwardly moved with respect to said slotted opening so as to vary the properties of the acoustic signals received by said pickup device via movement of the instrument strings.

5,911,172
RETRACTABLE UNDERWATER TURRET

Kyrill V. Korolenko, East Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 24, 1997, Appl. No. 823,776
Int. Cl.[6] F41A *23/24*
U.S. Cl. 89—5 **20 Claims**



1. An underwater turret system comprising:

an underwater turret;

an underwater, water tight bay for storing said turret therein, said bay having door means whereby said turret may be deployed therethrough for operational use;

means for pumping water into and out of said bay;

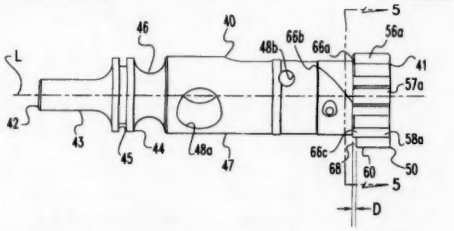
means for drying said turret and said bay when water has been extracted therefrom; and

means for supporting, deploying, and retrieving said turret through said door means.

5,911,173
BREECH BOLT ASSEMBLY FOR A FIREARM

Mark A. Westrom, 230 Cherry Ct., Silvis, Ill. 81282

Filed Oct. 18, 1996, Appl. No. 735,077
Int. Cl.[6] F41A *3/26*
U.S. Cl. 89—185 **24 Claims**



1. A method for increasing reliability of a gun, comprising:

(a) disassembling the gun, the gun having a receiver housing a breech bolt and an extractor, the extractor being coupled to the breech bolt and configured to move relative thereto, the

bolt having at least five radially extending bolt lugs each configured for bearing contact with a corresponding one of a number of receiver lugs of the receiver when positioned for firing, the bolt lugs including a first, second, and third bolt lug, the third bolt lug extending from the bolt opposite a location between the first and second bolt lugs configured to receive the extractor;

(b) providing a more uniform loading relationship between the bolt lugs and the receiver lugs when firing the gun by altering the gun to prevent formation of a bearing relationship between the third bolt lug and the corresponding one of the receiver lugs when the bolt lugs and the receiver lugs are positioned for firing; and

(c) reassembling the gun.

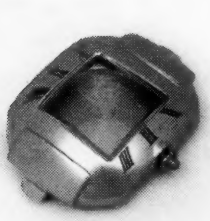
DESIGNS

JUNE 8, 1999

410,581
WRISTWATCH

Masaharu Tanaka, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

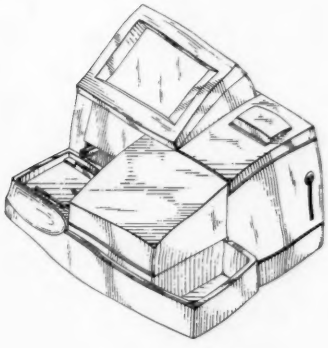
Filed Mar. 11, 1998, Appl. No. 84,832
Claims priority, application Japan, Sep. 11, 1997, 9-67479
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



410,582
REAGENT STRIP ANALYZER

William E. Bigler, Columbus; H. David Collins, Granger, both of Ind.; Ken Martin; Diego A. Rodriguez, both of Palo Alto, Calif., and Elisha Tal, San Francisco, Calif., assignors to Bayer Corporation, Elkhart, Ind.

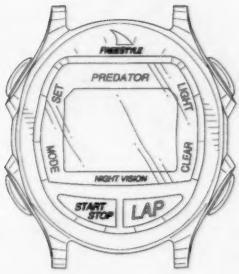
Filed Feb. 9, 1998, Appl. No. 83,240
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D10—31



410,583
WATCH

Roman Spandrio, Camarillo, and Jose V. JaVellana, Pasadena, both of Calif., assignors to Sunburst Products, Inc., Camarillo, Calif.

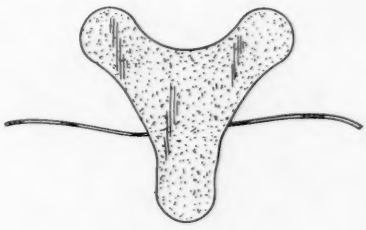
Filed Sep. 25, 1998, Appl. No. 94,088
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—38



410,584
ELECTRONIC TEMPERATURE/PRESSURE TRANSDUCER

Peter Stasz, St. Paul; David Mathews, Blaine, and Charles Bille, White Bear Lake, all of Minn., assignors to AlphaMed, Inc., Minneapolis, Minn.

Filed Nov. 18, 1998, Appl. No. 96,681
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—57

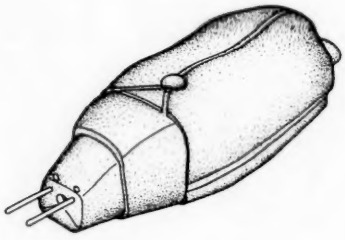


410,585

LASER INDICATOR

Ko-Liang Ho, No. 305, Hua Cheng Rd., Hsinchuang, Taipei Hsien, Taiwan

Filed May 6, 1998, Appl. No. 87,603
Term of patent 14 years
LOC (6) Cl. 10 - 04
U.S. Cl. D10—69

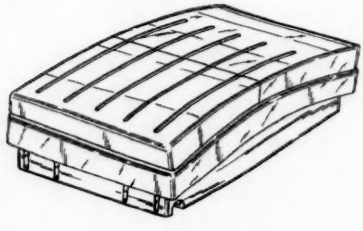


410,586

FIRE DETECTOR

Kurt-Are Olsen, Mjølanvn. 44, Moirana, Norway, N-8600

Filed Apr. 13, 1998, Appl. No. 86,441
Claims priority, application Norway, Oct. 15, 1997, 970703
Term of patent 14 years
LOC (6) Cl. 10 - 05
U.S. Cl. D10—106

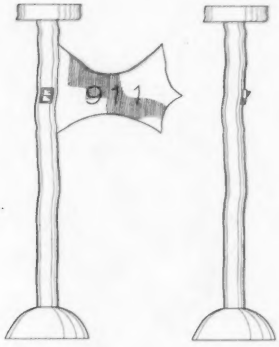


410,587

EMERGENCY VEHICLE SIGNAL

Howard Chew, 504 Midway Dr., Lexington Park, Md. 20653

Filed Sep. 10, 1998, Appl. No. 93,388
Term of patent 14 years
LOC (6) Cl. 10 - 05
U.S. Cl. D10—109



410,588

LIGHTED SAFETY UNIT

Peter Camposeo, 250 Charter Oak St., and Cathryn Johnson, 15 Victoria Rd., both of Manchester, Conn. 06040

Filed Sep. 17, 1998, Appl. No. 93,769
Term of patent 14 years
LOC (6) Cl. 10 - 05
U.S. Cl. D10—114

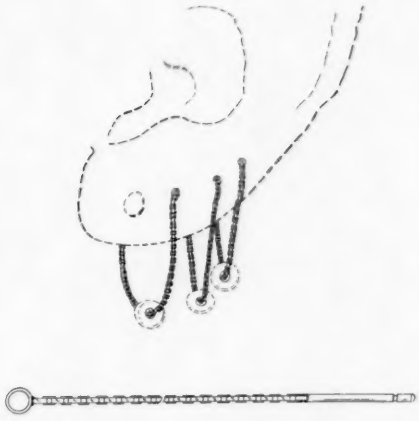
410,589

BODY PIERCING CHAIN

Rhonda Lagergren, Monticello, Minn., assignor to Rhonda Company, Monticello, Minn.

Filed Apr. 7, 1997, Appl. No. 68,917
Term of patent 14 years
LOC (6) Cl. 11 - *01*

U.S. Cl. D11—40



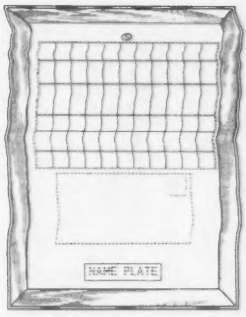
410,591

MUSICAL STAMP PORTRAIT

Walter F. Webb, 6641 Claridge St., Philladelphia, Pa. 19111

Filed Jul. 9, 1998, Appl. No. 90,475
Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—132



410,590
GEMSTONE

Shlomo Cohen, 32 Ben Yehuda St., Netanya, Israel

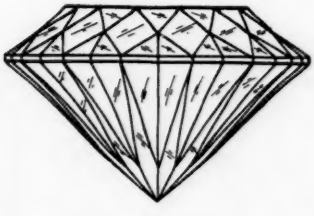
Continuation of application No. 29/043,016, Aug. 24, 1995, which is a continuation of application No. 29/017,721, Jan. 21, 1994, which is a continuation of application No. 29/008,233, May 11, 1993, abandoned, which is a continuation of application No. 07/530,729, May 30, 1990, abandoned. This application Jun. 7, 1996, Appl. No. 56,223.

Claims priority, application Israel, Feb. 20, 1990, 16204

This patent is subject to a terminal disclaimer

Term of patent 14 years
LOC (6) Cl. 11 - *01*

U.S. Cl. D11—90



410,592
URN AND HANGING PLANTER WITH FLORAL-ADORNED LIP

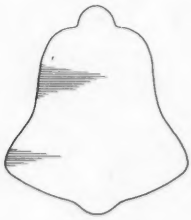
Leo P. Niemiec, Northfield, Ill., assignor to Lawnware Products, Inc., Morton Grove, Ill.

Filed Aug. 8, 1997, Appl. No. 74,814
Term of patent 14 years
LOC (6) Cl. 11 - *02*

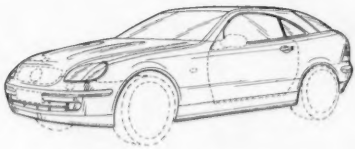
U.S. Cl. D11—151

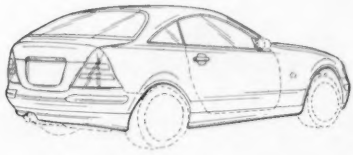
410,593
PLANT ORNAMENT
Bradley Emalfarb, 763 Bunker Ct., Riverwoods, Ill. 60015
Continuation-in-part of application No. 08/943,651, Oct. 3, 1997. This application Jun. 25, 1998, Appl. No. 89,893.
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—158

410,594
CONFETTI
Ardina K. Sterr, Sherman Oaks, and S. Clark Bason, Palm Springs, both of Calif., assignors to Artistry In Motion Entertainment, Inc., Van Nuys, Calif.
Continuation of application No. 08/658,834, May 31, 1996, abandoned. This application May 18, 1998, Appl. No. 88,212.
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—184

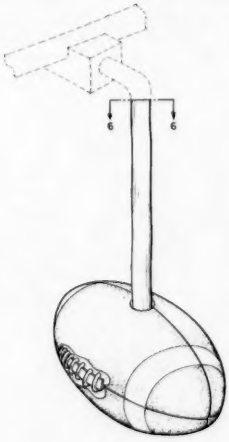


410,595
EXTERIOR SURFACE CONFIGURATION OF A VEHICLE
Bruno Sacco, Sindelfingen, and Peter Pfeiffer, Boeblingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed May 4, 1998, Appl. No. 87,468
Claims priority, application Germany, Nov. 4, 1997, M 97 10 171
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—92





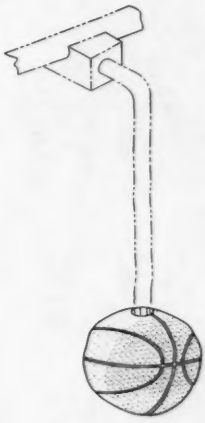
410,596
BICYCLE KICKSTAND SUPPORT
Rita June Mottern, 2178 Harbor View Dr., Dunedin, Fla. 34698, and Wallace William Gerren, 3771 State Rte. 44, Rootstown, Ohio 44272
Filed Jul. 23, 1996, Appl. No. 57,351
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—120



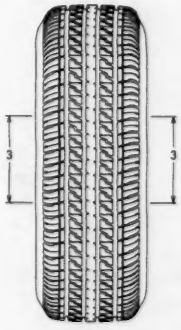
410,597
BICYCLE KICKSTAND SUPPORT
Rita June Mottern, 2178 Harbor View Dr., Dunedin, Fla. 34698, and Wallace William Gerren, 3771 State Rte. 44, Rootstown, Ohio 44272
Filed Jul. 23, 1996, Appl. No. 57,352
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—120

410,598
SOCCER BALL KICKSTAND SUPPORT
Rita June Mottern, 2178 Harbor View Dr., Dunedin, Fla. 34698, and Wallace William Gerren, 3771 State Rte. 44, Rootstown, Ohio 44272
Filed Jul. 23, 1996, Appl. No. 57,353
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—120

410,599
BICYCLE KICKSTAND SUPPORT
Rita June Mottern, 2178 Harbor View Dr., Dunedin, Fla. 34698, and Wallace William Gerren, 3771 State Rte. 44, Rootstown, Ohio 44272
Filed Jul. 23, 1996, Appl. No. 57,372
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—120



410,600
AUTOMOBILE TIRE
Shoichiro Matsuda, Kanagawa-ken, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Jul. 14, 1998, Appl. No. 90,708
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



410,601

AUTOMOBILE TIRE

Takehiko Murata, and Masato Fujita, both of Izumi-Ohtsu, Japan, assignors to The Ohtsu Tire & Rubber Co., Ltd., Osaka, Japan

Filed Jun. 18, 1998, Appl. No. 89,644

Claims priority, application Japan, Apr. 10, 1998, 10-10369

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147

410,602

AUTOMOBILE TIRE

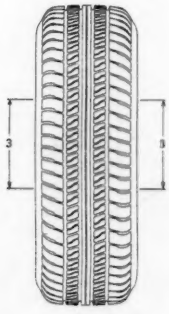
Shoichiro Matsuda, Kanawaga-ken, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1998, Appl. No. 90,648

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



410,603

TIRE SIDEWALL

Graeme Alfred Chandler, Morley; Gregory Richard Haydon, Sorrento; Stephen Harwood, Wembley, and Brian Frank Mangano, Crawley, all of Australia, assignors to AirBoss Tyres Pty. Ltd., Australia

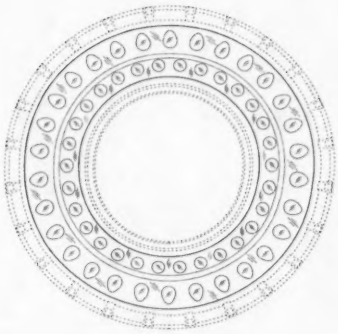
Continuation of application No. 29/047,073, Nov. 20, 1995, abandoned. This application Apr. 1, 1997, Appl. No. 69,446.

Claims priority, application Australia, May 19, 1995, 1547/95

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—152



410,604

EXTERIOR FACING SURFACE CONFIGURATION OF A FRONT BUMPER FOR AUTOMOBILE

Christopher Edward Bangle, Gilching, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

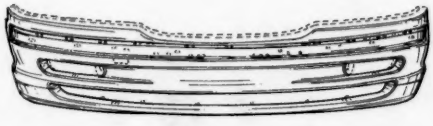
Filed Jan. 16, 1998, Appl. No. 82,214

Claims priority, application Germany, Jul. 16, 1997, M 97 06 695

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—169



410,605

EXTERIOR SURFACE CONFIGURATION OF A VENTILATION INSERT FOR THE FRONT BUMPER OF AN AUTOMOBILE

Christopher Edward Bangle, Gilching, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

Continuation-in-part of application No. 29/082,195, Jan. 16, 1998. This application Jun. 15, 1998, Appl. No. 89,386.

Claims priority, application Germany, Jul. 16, 1997, 97 06 695

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—169

410,606

FRONT FACE OF A STEERING WHEEL FOR VEHICLE

Bruno Sacco, Sindelfingen; Peter Pfeiffer, Boeblingen; Hans-Dieter Futschik, Gechingen, and Norbert Weber, Bondorf, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

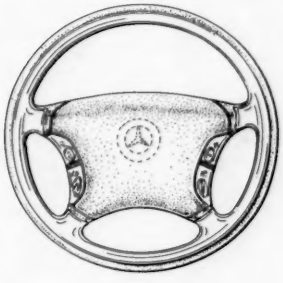
Filed Feb. 27, 1998, Appl. No. 84,292

Claims priority, application Germany, Aug. 27, 1997, M 97 07 820

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—176



410,607

REARVIEW MIRROR WITH WOODGRAIN BEZEL

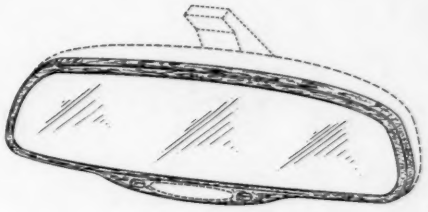
John W. Carter, Ottawa County, Mich., assignor to Gentex Corporation, Zeeland, Mich.

Filed Jul. 9, 1998, Appl. No. 90,496

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—187



410,608

DASHBOARD FOR A MOTOR VEHICLE

Ulrich Kraus, Villingen-Schwenningen, Germany, assignor to Mannesmann VDO AG, Villingen-Schwenningen, Germany

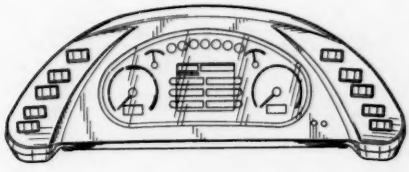
Continuation-in-part of application No. 29/068,712, Mar. 20, 1997, abandoned. This application Apr. 30, 1998, Appl. No. 87,437.

Claims priority, application Germany, Sep. 20, 1996, 96 08 173

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—192



410,609

MULTIPLE HANDLE CONFIGURATION FOR TRUCK BODY

Randall C. Hansen, 6 Old Mill Ct., Columbia, S.C. 29206

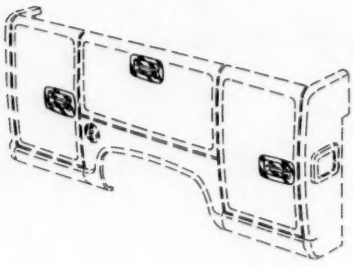
Filed Apr. 10, 1997, Appl. No. 77,169

This patent is subject to a terminal disclaimer

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—196



410,610

TRUCK BODY—TRUNK

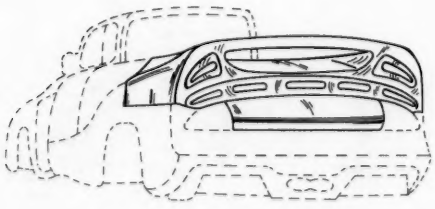
Mark E. Gerisch, Two Rivers, Wis., and Ronnie C. Sims, St. Clair Shores, Mich., assignors to Constant Velocity LLC, Two Rivers, Wis.

Filed Apr. 30, 1998, Appl. No. 87,305

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—196



410,611

TRUCK BODY—BACK END

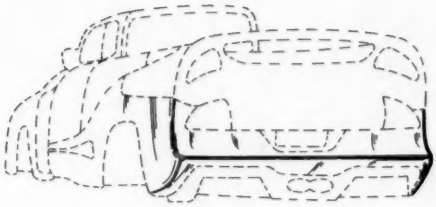
Mark E. Gerisch, Two Rivers, Wis., and Ronnie C. Sims, St. Clair Shores, Mich., assignors to Constant Velocity LLC, Two Rivers, Wis.

Filed Apr. 30, 1998, Appl. No. 87,353

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—196



410,612

BACKLIGHTED TRAILER STEP

James M. Payne, Willow Springs, Mo., assignor to EZ Loader Boat Trailers, Inc., Spokane, Wash.

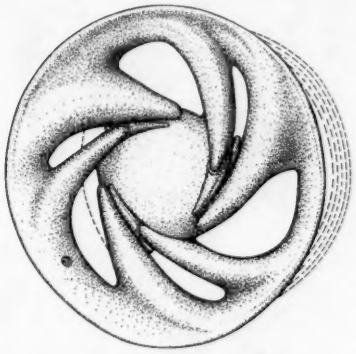
Filed Jan. 17, 1997, Appl. No. 65,034

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—203

410,613
FRONT FACE OF A CUSTOM WHEEL
Larry P. Brown, 274 W. Los Flores Dr., Altadena, Calif. 91001, and Frederick D. Brown, 3732 S. Dalton Ave., Los Angeles, Calif. 90018
Filed Aug. 22, 1997, Appl. No. 75,803
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



410,614
FRONT FACE OF A MOTOR VEHICLE WHEEL
Kevin R. Fitzgerald, Long Beach, Calif., assignor to KMC Products, Inc., Riverside, Calif.
Filed Jan. 15, 1998, Appl. No. 82,130
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209

410,615
SPOKE DESIGN FOR AN AUTOMOTIVE VEHICLE WHEEL
Leonardo Nogal, Long Beach, Calif., assignor to American Racing Equipment, Inc., Rancho Dominguez, Calif.
Filed May 1, 1998, Appl. No. 87,391
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209

410,616
FRONT FACE OF A VEHICLE WHEEL COVER
Saied Hussaini, and Marc Iacovelli, both of Miami, Fla., assignors to Rally Manufacturing, Inc., Miami, Fla.
Filed Oct. 29, 1998, Appl. No. 95,741
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209

410,617

FRONT FACE OF A VEHICLE WHEEL COVER

Saied Hussaini, and Marc Iacovelli, both of Miami, Fla., assignors to Rally Manufacturing, Inc., Miami, Fla.

Filed Oct. 29, 1998, Appl. No. 95,742

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—209

410,618

FRONT FACE OF A VEHICLE WHEEL COVER

Saied Hussaini, and Marc Iacovelli, both of Miami, Fla., assignors to Rally Manufacturing, Inc., Miami, Fla.

Filed Oct. 29, 1998, Appl. No. 95,744

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—211

410,619

DECORATIVE BASKET

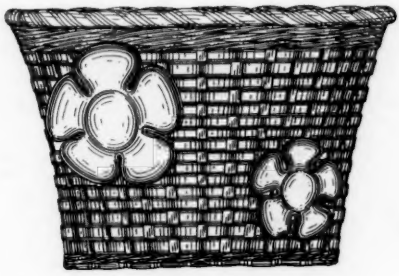
Lewis Hamowy, Brooklyn, N.Y., assignor to Cycle Express Inc., New York, N.Y.

Filed Feb. 20, 1998, Appl. No. 83,935

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—407



410,620

PORTABLE OFFICE ASSEMBLY WITH BRIEFCASE HOLDER

Bruno Sacco, Sindelfingen; Peter Pfeiffer, Boeblingen; Michael Mauer, Ettlingen, and Claudia Berger-Diebold, Pforzheim, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

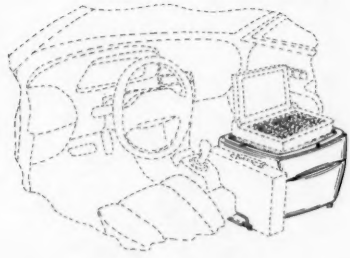
Filed Dec. 15, 1997, Appl. No. 80,731

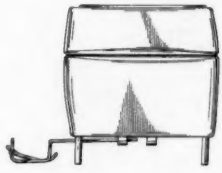
Claims priority, application Germany, Jun. 14, 1997, 97 05 493

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—415





410,621

FRONT STORAGE UNIT FOR A POP-UP CAMPER

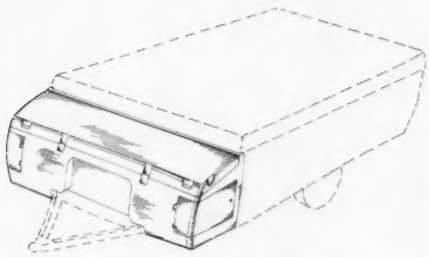
Ron E. Hall, Middlebury, Ind., assignor to Jayco, Inc., Middlebury, Ind.

Filed Sep. 25, 1997, Appl. No. 77,068

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—423



410,622

INSTRUMENT HOLDER

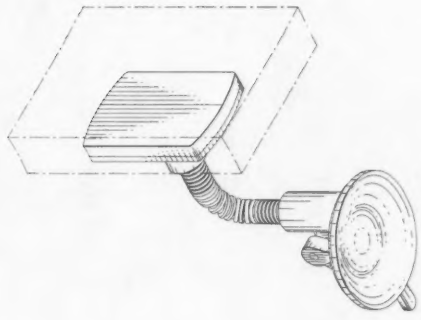
Herbert Richter, Drosselweg 8, 75331 Engelbrand, Germany

Filed May 4, 1998, Appl. No. 87,464

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—425



410,623

BATTERY

Petteri Kolinen, Helsinki, Finland, assignor to Nokia Mobile Phones Limited, Espoo, Finland

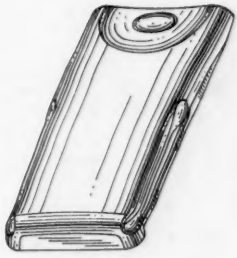
Filed Jan. 9, 1998, Appl. No. 81,755

Claims priority, application Finland, Jul. 18, 1997, 538/97

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—103



410,624

POWER SUPPLY

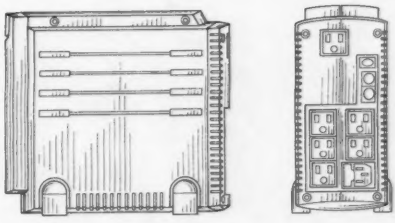
Pit-Kin Loh, Seremban, Malaysia, assignor to PK Electronic Industries Bhd, Malaysia

Filed Aug. 6, 1997, Appl. No. 74,727

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—110



410,625

HERMAPHRODITIC ELECTRICAL CONNECTOR TERMINATOR UNIT

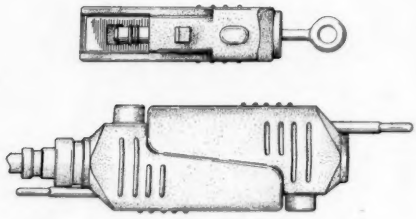
Leslie Laszlo Kerek, Los Angeles, and Tian Peng Tang, Rancho Palos Verdes, both of Calif., assignors to Tri-Star Electronics International, Inc., El Segundo, Calif.

Continuation-in-part of application No. 29/058,703, Aug. 21, 1996, Pat. No. Des. 395,282. This application Apr. 1, 1998, Appl. No. 85,934.

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—133



410,626

ELECTRICAL OUTLET STRIP

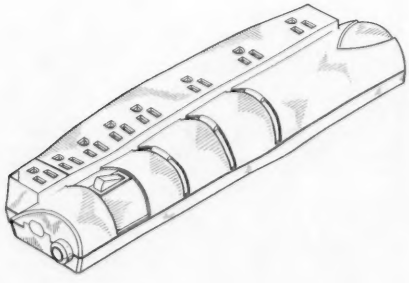
Hobbes Huang, 18F-1, No. 77, Hsin-Tai 5th Rd., Sec. 1, Hsi-*Chin Cheng, Taipei Hsien, Taiwan*

Filed Oct. 7, 1998, Appl. No. 94,676

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—139.6



410,627

CABLE CONNECTOR INTERFACE

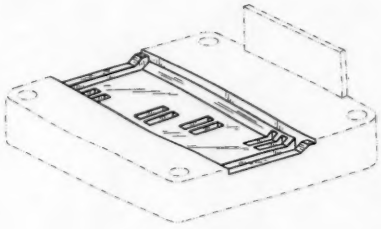
David D. Brandt, Milwaukee, Wis.; Robert E. Lounsbury, Chardon, Ohio; Dennis C. Mackey, Hamilton, Mass.; Earl W. McCleerey, Mechanicsburg, Pa.; Michael E. Shirk, Grantville, Pa.; Brian J. Taylor, Arlington, Mass.; Douglas M. Walburn, Linglestown, Pa.; Robert W. Walker, Harrisburg, Pa., and Robert N. Whiteman, Jr., Middletown, Pa., assignors to Allen-Bradley Company, LLC, Milwaukee, Wis.

Filed Nov. 7, 1997, Appl. No. 79,088

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—146



410,628

ELECTRICAL CONNECTOR

Kun-Tsan Wu, Tu-Chen, Taiwan, assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

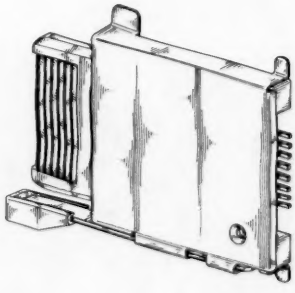
Filed May 1, 1998, Appl. No. 87,427

Claims priority, application Taiwan, Nov. 3, 1997, 86309561

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—147

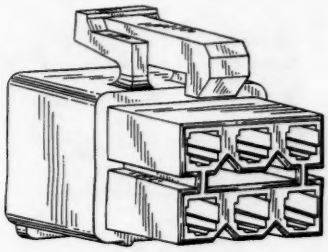


410,629

RECEPTACLE CONNECTOR

Michael A. Bandura, Lisle; Charles Maniapaz, Chicago, and Lawrence E. Mosley, Jr., Justice, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed May 12, 1998, Appl. No. 87,938
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147

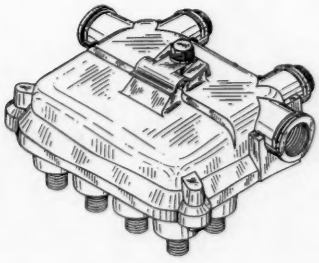


410,630

TAP OFF FOR A CABLE TELEVISION

Makoto Kodaira, and Takuya Hatakeyama, both of Tokyo, Japan, assignors to Uro Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1998, Appl. No. 90,057
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—151

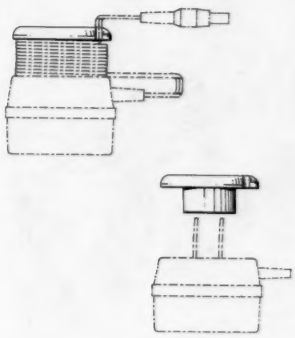


410,631

CORD STORAGE AND PRONG PROTECTOR DEVICE

Clifton D. Foster, 510 Heritage Ct., South, Auburn, Ala. 36830

Filed Aug. 11, 1998, Appl. No. 92,065
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—156

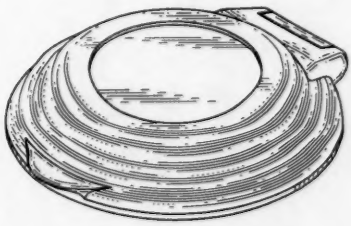


410,632

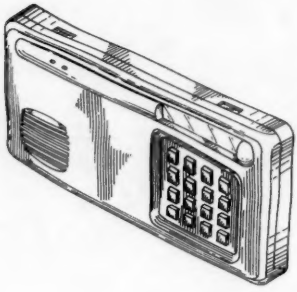
COVERED ELETRICAL INLET HOUSING

Peter K. Deutsch, Novato, Calif., assignor to Marinco, Napa, Calif.

Filed Aug. 18, 1998, Appl. No. 92,418
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—156

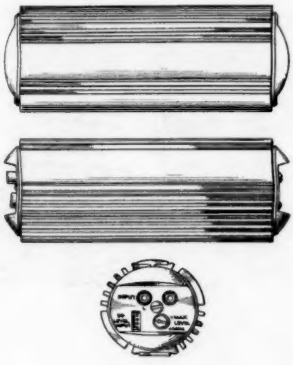


410,633
REMOTE CONTROL UNIT
Philip Y. W. Tsui, 3513 Ingram Road, Mississauga, Ontario, Canada, 15L 4M4
Division of application No. 29/064,997, Jan. 16, 1997. This application Jul. 24, 1997, Appl. No. 73,967.
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—168

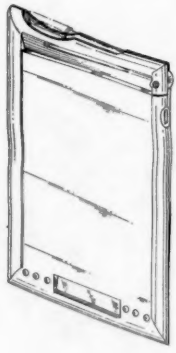


410,634
SUPPORT PART FOR A HOLDER FOR ELECTRONICS AND INSTRUMENTATION ENCLOSURE
John-Erik Sonntag, Tammisaari, Finland, assignor to Fibox Oy AB, Jorvas, Finland
Filed Oct. 7, 1997, Appl. No. 77,442
Claims priority, application Finland, Apr. 7, 1997, 248/97
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—173

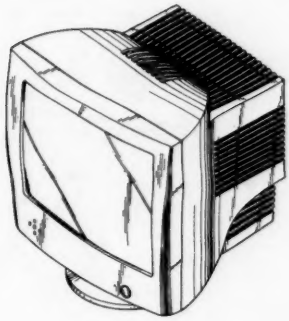
410,635
AMPLIFIER HEAT SINK
Youssef Kaveh, Beverly Hills, Calif., assignor to Helix Electronics, Inc., Gardena, Calif.
Filed Mar. 9, 1998, Appl. No. 84,676
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—179



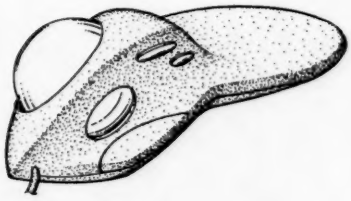
410,636
ELECTRONIC NOTEPAD
David Joseph Arthur, Norwood; Joseph David Arruda, III, Swansea; Brian Keith Mullins, Groton; Ronald J. Vish, Somerville, and Terrence Keith Jones, Sharon, all of Mass., assignors to A.T.X. International, Inc., Lincoln, R.I.
Filed Aug. 7, 1998, Appl. No. 91,861
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



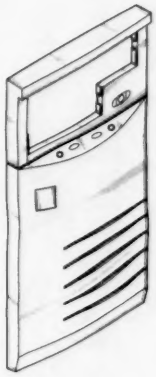
410,637
COMPUTER DISPLAY
Chih-Peng Ma, and Yu-Hsin Chuo, both of Taipei, Taiwan, assignors to Compal Electronics, Inc., Taipei, Taiwan
Filed Dec. 4, 1998, Appl. No. 97,388
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—113



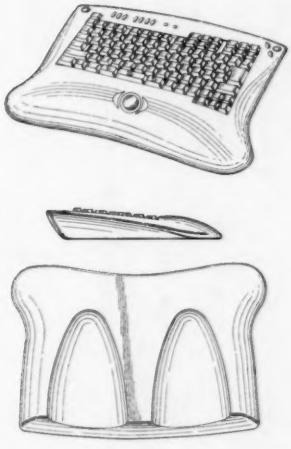
410,638
OPTICAL TRACKBALL
Peter Sheehan, Bray, and Cathal Loughnane, Dublin, both of Ireland, assignors to Logitech Incorporated, Fremont, Calif.
Filed May 8, 1998, Appl. No. 87,783
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



410,639
TOWER COMPUTER FRONT PANEL
Richard C. Y. Fu, Cerritos, Calif., assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan
Filed May 1, 1998, Appl. No. 87,431
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



410,640
KEYBOARD DEVICE
Scott Henderson, New York, N.Y., and Hiromi Chiba, Kanagawa-ken, Japan, assignors to Alps Electric Co., Ltd., Japan
Filed May 19, 1998, Appl. No. 88,266
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



410,641

COMPUTER FRONT BEZEL

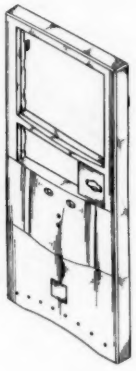
Richard C. Y. Fu, Cerritos, Calif., assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Jul. 22, 1998, Appl. No. 91,158

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—115



410,642

COMPUTER PANEL

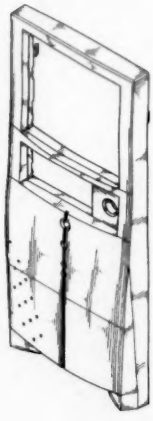
Richard C. Y. Fu, Cerritos, Calif., assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Jul. 22, 1998, Appl. No. 91,159

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—115



410,643

WIRELESS GAME PLAYER DEVICE

Eduardus Josephus Anna Maria Tonino, Nuenen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 22, 1998, Appl. No. 86,879

Claims priority, application Hague Agreement, Nov. 14, 1997, DMA/003913

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D14—117.9

410,644

AUDIO, VIDEO, AND COMPUTER DATA CARTRIDGE

Syed H. Iftikar, Pleasanton; Albert J. Guerini, Gilroy, and Long Nguyen, San Jose, all of Calif., assignors to Castlewood Systems, Inc., Milpitas, Calif.

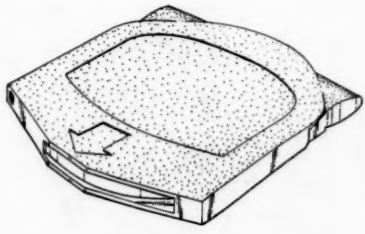
Filed May 12, 1998, Appl. No. 87,954

This patent is subject to a terminal disclaimer

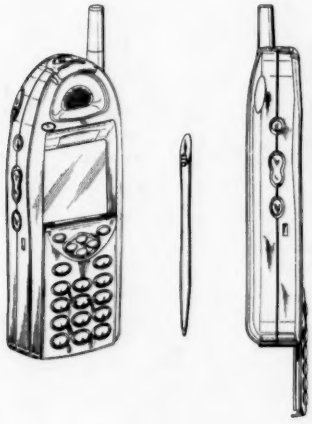
Term of patent 14 years

LOC (6) Cl. 14 - *99*

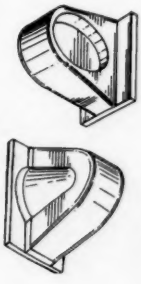
U.S. Cl. D14—121



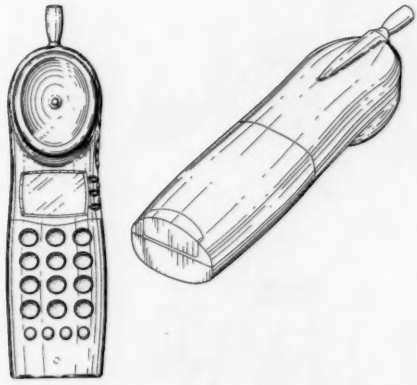
410,645
MOBILE TELEPHONE
Todd Andrew Wood, and Neal T. Cowan, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Mar. 17, 1998, Appl. No. 85,141
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



410,646
COIN SLOT GUARD
W. Thomas McClellan, 2571 Del Lago Dr., Fort Lauderdale, Fla. 33316
Filed Sep. 4, 1998, Appl. No. 93,195
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—146

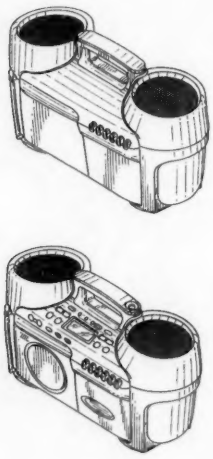


410,647
TELEPHONE HANDSET
Ronald Leroy Lytel, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Jan. 23, 1998, Appl. No. 82,497
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—147

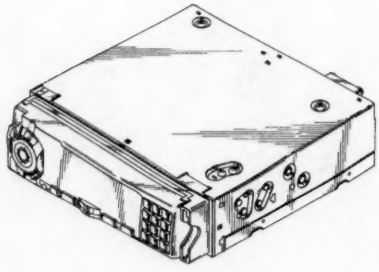


410,648
TELEPHONE
Josh Zeitman, Brooklyn, N.Y., assignor to Lenoxx Electronics Corp., Hong Kong, The Hong Kong Special Administrative Region of the People's Republic of China
Filed Jun. 10, 1998, Appl. No. 89,240
This patent is subject to a terminal disclaimer
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—151

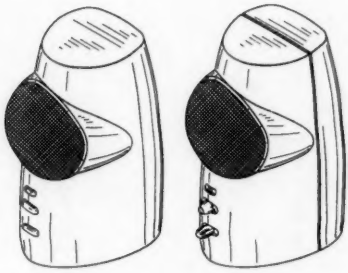
410,649
TAPE RECORDER COMBINED WITH DISC PLAYER AND RECEIVER
Takayuki Kobayashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 12, 1997, Appl. No. 79,320
Claims priority, application Japan, Jun. 10, 1997, 9-57207
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—163



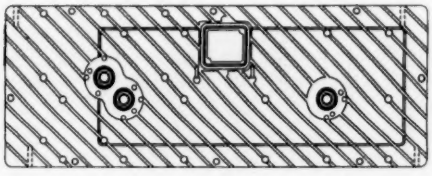
410,650
DIGITAL AUDIO DISK PLAYER WITH CAR TUNER
Akira Hara, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan
Filed Jun. 4, 1998, Appl. No. 88,950
Claims priority, application Japan, Jan. 7, 1998, 10-101
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—168



410,651
SPEAKER BOX
Satoshi Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 29, 1998, Appl. No. 82,656
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—215



410,652
OUTDOOR TRANSMIT/RECEIVE ANTENNA MOUNTING ENCLOSURE
Clifford T. Jones, Raleigh, and Thomas W. Ruckdeschel, Apex, both of N.C., assignors to Ericsson, Inc., Research Triangle Park, N.C.
Filed Dec. 27, 1996, Appl. No. 64,321
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—238



410,653

TELECOMMUNICATIONS SWITCH

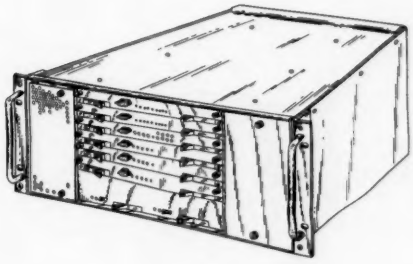
Christopher E. Roy, Plymouth; Kathleen M. Lacey, Mashpee, and Lori B. Pass, Cotuit, all of Mass., assignors to Excel Switching, Inc., Hyannis, Mass.

Filed Sep. 8, 1997, Appl. No. 76,348

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—240



410,654

SWITCHING APPARATUS FOR TELEPHONE SET

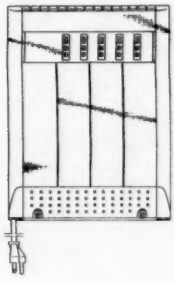
Eiichi Taniguchi, Kawasaki, Japan, assignor to Nitsuko Corporation, Kanagawa, Japan

Filed Oct. 30, 1997, Appl. No. 82,381

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—240



410,655

TELEPHONE HANDSET

Jose Delhaes, Muhlheim am Main, Germany, assignor to Alcatel Business Systems, France

Filed Oct. 17, 1997, Appl. No. 77,997

Claims priority, application Hague Agreement, Apr. 23, 1997, DM/039 952

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—248

410,656

BOOM FOR SPRAYER

Michael M. Thyberg, Washburn; Oryn B. Wagner, Bismarck, both of N. Dak.; Robert A. Schofield, Melbourne, Fla., and Gary F. Langer, Crivitz, Wis., assignors to AGCO Corporation, Duluth, Ga.

Filed Dec. 9, 1997, Appl. No. 80,417

Term of patent 14 years

LOC (6) Cl. 15 - *03*

U.S. Cl. D15—13

410,657

GROOVED EARTH WORKING TOOL

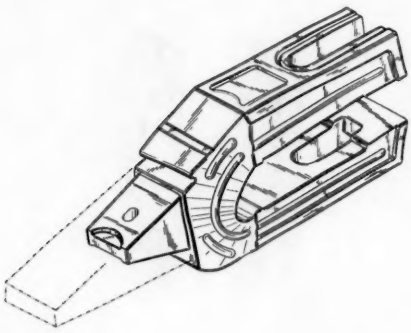
Brian L. Launder, Tulsa, and Charles Clendenning, Broken Arrow, both of Okla., assignors to H&L Tooth Company, Tulsa, Okla.

Filed Sep. 3, 1997, Appl. No. 75,579

Term of patent 14 years

LOC (6) Cl. 15 - *04*

U.S. Cl. D15—29



410,658

CONDUIT BENDER HEAD

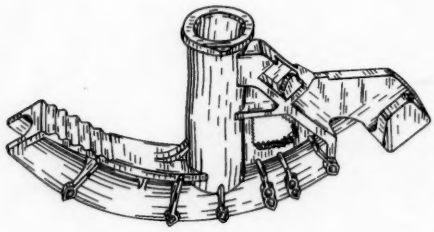
Dean R. Walsten, Slinger, Wis., assignor to Applied Power Inc., Butler, Wis.

Filed Apr. 2, 1998, Appl. No. 86,012

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—123



410,659

GEAR

Hans-Jürgen Lannoch, Linkenheim-Hochstetten, Germany, assignor to Sew-Eurodrive GmbH & Co., Bruchsal, Germany

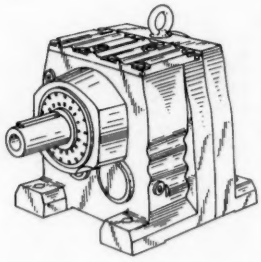
Filed Aug. 18, 1997, Appl. No. 74,989

Claims priority, application Hague Agreement, Feb. 21, 1997, DM/039261

Term of patent 14 years

LOC (6) Cl. 15 - *01*

U.S. Cl. D15—148



410,660

INDUSTRIAL ROBOT

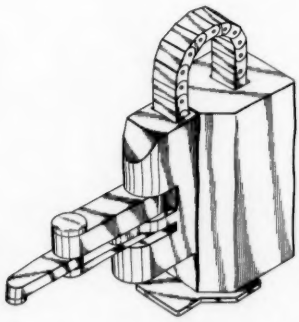
Kiyomi Kawaguchi, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Japan

Filed Jun. 19, 1998, Appl. No. 89,707

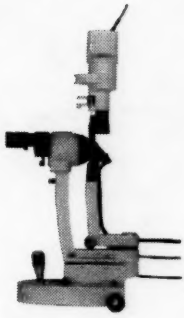
Term of patent 14 years

LOC (6) Cl. 15 - *99*

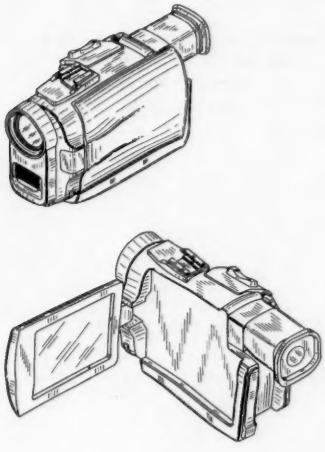
U.S. Cl. D15—199



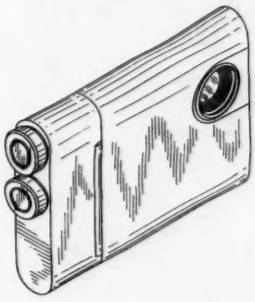
410,661
SLIT LAMP MICROSCOPE
Theodor Wolf, Senden, Germany, assignor to Haag-Streit AG, Koniz, Switzerland
Filed May 7, 1998, Appl. No. 87,669
Claims priority, application Switzerland, Nov. 7, 1997, 124 614
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—131



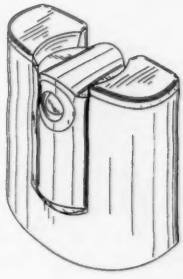
410,662
COMBINED VIDEO TAPE RECORDER AND CAMERA
Tomohiro Harata, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 25, 1997, Appl. No. 75,349
Claims priority, application Japan, Feb. 24, 1997, 9-5154
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



410,663
ELECTRONIC CAMERA
Shinichi Ogasawara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 20, 1997, Appl. No. 79,665
Claims priority, application Japan, May 21, 1997, 9-55007
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



410,664
ELECTRONIC CAMERA WITH A SCREEN
Takuro Hibino, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 29, 1998, Appl. No. 82,654
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202

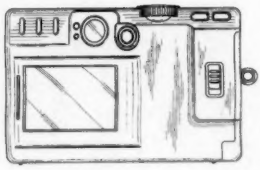


410,665

ELECTRONIC CAMERA

Toru Shinano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1998, Appl. No. 87,825
Claims priority, application Japan, Nov. 14, 1997, 9-74997
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202

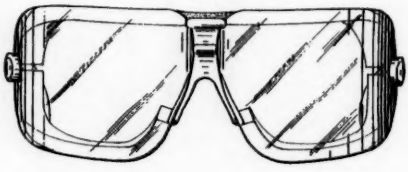


410,666

EYEWEAR WITH FOAM FLANGE

James Hall, Lincoln, R.I.; Keith Fecteau, Wilbraham, Mass.; Raoul Desy, Sturbridge, Mass., and John Salce, Auburn, Mass., assignors to Cabot Safety Intermediate Corporation, Southbridge, Mass.

Continuation-in-part of application No. 29/054,494, May 2, 1996, Pat. No. Des. 399,233. This application Feb. 26, 1997, Appl. No. 67,138.
This patent is subject to a terminal disclaimer
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—315



410,667

EYEWEAR

Kip Arnette, South Laguna Beach, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

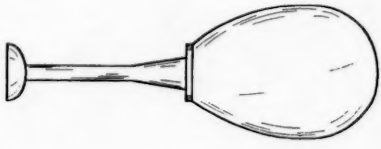
Filed Dec. 5, 1997, Appl. No. 80,381
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—327

410,668

CONTACT LENS APPLICATION AND REMOVER DEVICE

Ricardo Malave, 640 E. 137th St. Apt 4C, Bronx, N.Y. 10454

Filed Jul. 10, 1997, Appl. No. 73,393
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—331



410,669

STRINGED INSTRUMENT SUPPORT

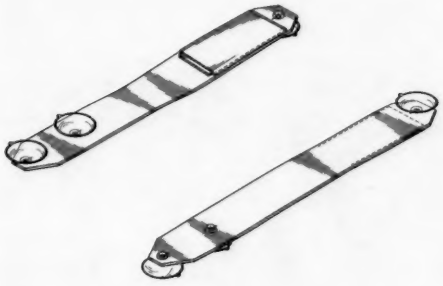
Mark J. Hamre, 812 W. 23rd Ave., Spokane, Wash. 99203

Filed May 5, 1997, Appl. No. 70,274

Term of patent 14 years

LOC (6) Cl. 17 - *03*

U.S. Cl. D17—20



410,670

ELECTRIC GUITAR BODY

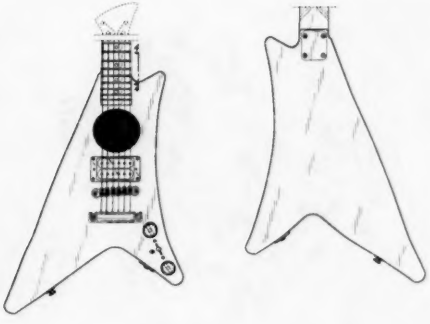
Joseph K. Medley, Goodletsville, Tenn., assignor to Gibson Guitar Corp., Nashville, Tenn.

Filed Jul. 7, 1998, Appl. No. 90,341

Term of patent 14 years

LOC (6) Cl. 17 - *03*

U.S. Cl. D17—20



410,671

TEACHING DEVICE FOR GUITAR PLAYERS

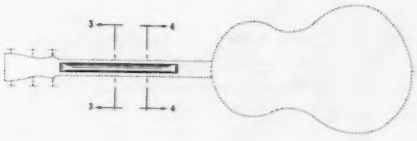
Michael M. Aleksa, 2805 Abbey Ln., Richmond, Va. 23233, assignor to Michael M. Aleksa, Richmond, Va.

Filed Dec. 13, 1996, Appl. No. 63,724

Term of patent 14 years

LOC (6) Cl. 17 - *99*

U.S. Cl. D17—99



410,672

CD BOX WITH CALCULATOR

Tung Chen Chu, 2Fl., No. 32, Yu Cheng St., Taipei, Taiwan

Filed Aug. 25, 1998, Appl. No. 92,768

Term of patent 14 years

LOC (6) Cl. 18 - *01*

U.S. Cl. D18—2

410,673

DOUBLE DAB INK DAUBER

Becky B. Martin, and Shelly D. Nellis, both of 1407 S. Washington St., Roswell, N. Mex. 88201

Continuation of application No. 29/002,813, Dec. 21, 1992, abandoned. This application May 3, 1994, Appl. No. 22,298.

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D18—15

410,674

TAPE WRITING DEVICE

Hiroaki Tanaka; Kenji Watanabe; Takanobu Kameda, and Tomoyuki Shimmura, all of Tokyo, Japan, assignors to King Jim Co., Ltd., Tokyo, Japan

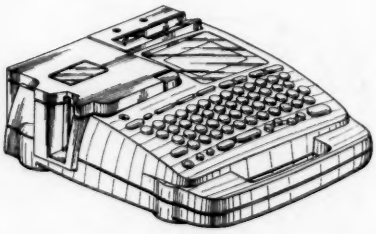
Filed Apr. 22, 1997, Appl. No. 68,978

Claims priority, application Japan, Dec. 27, 1996, 8-39289

Term of patent 14 years

LOC (6) Cl. 18 - *99*

U.S. Cl. D18—19



410,675

PHOTOCOPIER

Hiroaki Ohashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

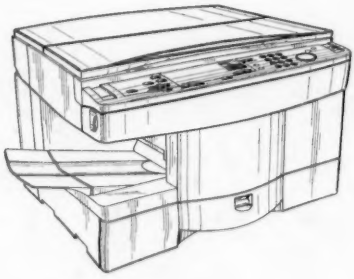
Filed Aug. 11, 1998, Appl. No. 92,048

Claims priority, application Japan, Feb. 16, 1998, 10-004031

Term of patent 14 years

LOC (6) Cl. 16 - *03*

U.S. Cl. D18—36



410,676

IMAGE DRUM CARTRIDGE

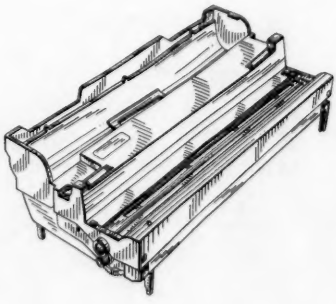
Atsushi Kurabayashi; Sinichi Otani, and Yoshiharu Momiyama, all of Tokyo, Japan, assignors to Oki Data Corporation, Tokyo, Japan

Filed Nov. 19, 1997, Appl. No. 79,535

Term of patent 14 years

LOC (6) Cl. 16 - *03*

U.S. Cl. D18—40



410,677

AUTOMATIC LABEL APPLYING APPARATUS FOR TEST TUBES

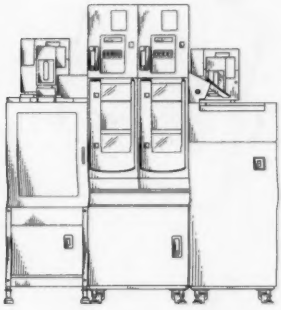
Toshikazu Matsumoto, and Yoshimi Hirasawa, both of Kawasaki, Japan, assignors to Techno Medica Co., Ltd., Kanagawa, Japan

Filed Aug. 21, 1996, Appl. No. 59,705

Term of patent 14 years

LOC (6) Cl. 18 - *02*

U.S. Cl. D18—53



410,678

CALENDAR FOR CHARTING LIFE'S RHYTHMS

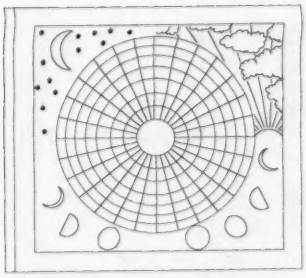
Laury Lear, 114 Sunset Dr., Annapolis, Md. 21403

Filed Aug. 5, 1996, Appl. No. 57,923

Term of patent 14 years

LOC (6) Cl. 19 - *03*

U.S. Cl. D19—20



410,679

BOOKMARK WITH BEADED TASSEL

Dale A. Blanchard, Yellow Springs, and Margaret B. Schryver, Dayton, both of Ohio, assignors to The Antioch Company, Yellow Springs, Ohio

Filed May 28, 1998, Appl. No. 88,578

Term of patent 14 years

LOC (6) Cl. 19 - *06*

U.S. Cl. D19—34

410,680

CIGAR-SHAPED PEN

Franck Muller, Genthod, Switzerland, assignor to Franck Muller Watch Land SA, Genthod, Switzerland

Filed Oct. 16, 1998, Appl. No. 95,128

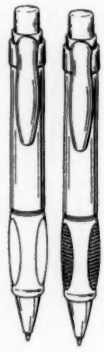
Claims priority, application Hague Agreement, Apr. 17, 1998, DMA/004070

Term of patent 14 years

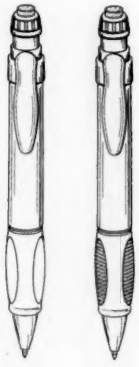
LOC (6) Cl. 19 - *06*

U.S. Cl. D19—42

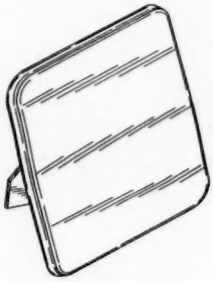
410,681
WRITING INSTRUMENT
Hiromichi Izushima, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan
Filed May 20, 1998, Appl. No. 88,280
Claims priority, application Japan, Nov. 21, 1997, 9-76069; Nov. 21, 1997, 9-76070; May 15, 1998, 10-13893; May 15, 1998, 10-13894
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—51



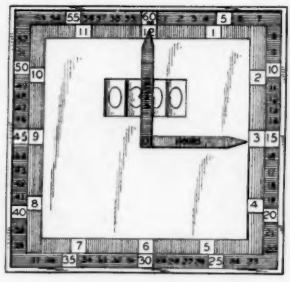
410,682
WRITING INSTRUMENT
Hiromichi Izushima, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan
Division of application No. 29/088,280, May 20, 1998. This application Dec. 10, 1998, Appl. No. 97,626.
Claims priority, application Japan, Nov. 21, 1997, 9-7607; Nov. 21, 1997, 9-76069; May 15, 1998, 10-13893; May 15, 1998, 10-13894
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—51



410,683
ERASABLE CERAMIC MESSAGE PAD
Robert L. Carter, 21452 Countryside, Lake Forest, Calif. 92630
Filed Jul. 10, 1997, Appl. No. 73,453
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—52



410,684
LEARNING CLOCK
Peter A. Messina, 26 Ironia-Mendham Rd., Chester, N.J. 07930
Division of application No. 29/078,469, Oct. 27, 1997. This application Oct. 14, 1998, Appl. No. 94,987.
Term of patent 14 years
LOC (6) Cl. 19 - *07*
U.S. Cl. D19—64

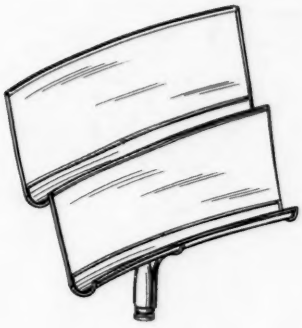


410,685

DOCUMENT STORAGE AND DISPLAY UNIT

Clarkson S. Thorp, Wayland, and Douglas R. Himebaugh, Fruitport, both of Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Jun. 4, 1998, Appl. No. 88,944
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—90

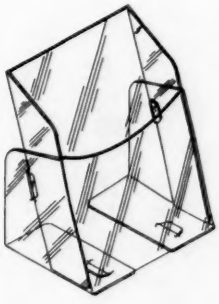


410,686

LITERATURE HOLDER

Stuart C. W. Wear, St. Louis Park, Minn., assignor to Popco, Inc., Minneapolis, Minn.

Filed Sep. 29, 1998, Appl. No. 94,255
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—90

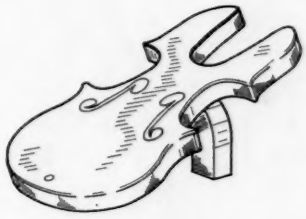


410,687

BOOT JACK

Aldoria Robichaud, Boite Postale 59, Lagaceville, New Brunswick, Canada, E0C 1K0

Filed Jul. 6, 1998, Appl. No. 90,297
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D2—642

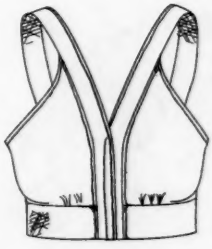


410,688

FEMALE SOFT SUPPORT APPAREL

Sharon L. Robinson, 180 Quality Ave. N., Lakeland, Minn. 55043, and Kim A. Hohmeister, 3136 W. Campaign Dr., South Jordan, Utah 84095

Filed Dec. 2, 1996, Appl. No. 63,191
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D2—709

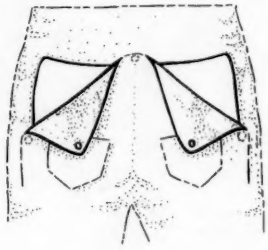


410,689

GARMENT REAR

Joanne Slokevage, 348 E. 81 St., New York, N.Y. 10028

Filed Nov. 21, 1996, Appl. No. 62,690
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—857

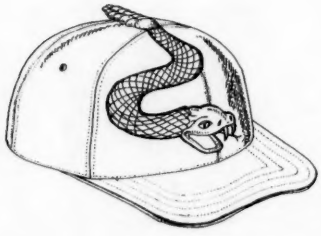


410,690

RATTLE HEAD CAP

Richard J. Pratt, 12635 E. Jenan Dr., and Dane E. Senser, 11375 E. Sahuaro Dr. #1095, both of Scottsdale, Ariz. 85259

Filed Mar. 5, 1998, Appl. No. 84,542
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—872

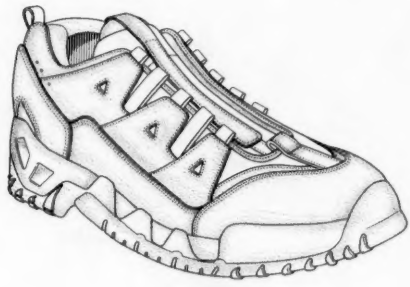


410,691

PERFORMANCE-ORIENTED SHOE

Joseph D. Boyer, Newington, N.H., assignor to The Timberland Company, Stratham, N.H.

Filed May 19, 1998, Appl. No. 88,224
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—902



410,692

BOOT FOR AN IN-LINE SKATE

Catherine M. Bailey, San Francisco, Calif., assignor to K-2 Corporation, Vashon, Wash.

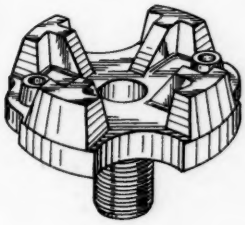
Filed Jun. 11, 1997, Appl. No. 72,249
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—904

410,693

GOLF SHOE SPIKE

Robert Brockman, 2928 Elmwood Ave., Bakersfield, Calif. 93305

Filed Nov. 10, 1997, Appl. No. 79,224
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—962



410,694

PORTION OF A SHOE WITH A POCKET

Peter Hooglander, 270 Iroquois St., Ronkonkoma, N.Y. 11779

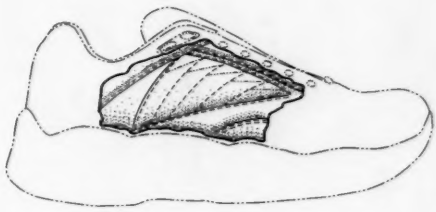
Provisional application No. 60/079,627, Mar. 27, 1998. This application Apr. 29, 1998, Appl. No. 87,228.
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972

410,695

SIDE ELEMENT OF A SHOE UPPER

Peter M. Fogg, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jan. 8, 1999, Appl. No. 98,892
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972

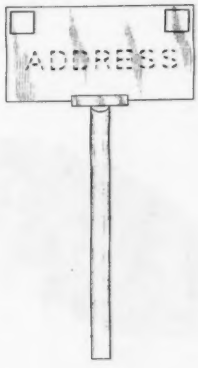


410,696

ROADSIDE ADDRESS SIGN WITH POST

Edward L Powers, 76 Raintree Dr., Port Oragne, Fla. 32127

Filed Apr. 15, 1996, Appl. No. 53,286
This patent is subject to a terminal disclaimer
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—41



410,697

SIGN SUPPORT STRUCTURE

Steven Smart, Draper, Utah, assignor to Smart Design, Inc., Draper, Utah

Filed Sep. 18, 1998, Appl. No. 93,787

Term of patent 14 years

LOC (6) Cl. 20 - *02*

U.S. Cl. D20—41

410,698

HAPTONOMIC INSTRUMENT FOR TESTING THE FEEL OF ARTICLES MADE OF PLASTIC

Franciscus W. M. Gelissen, Selfkant, Germany, assignor to DSM N.V., Heerlen, Netherlands

Filed May 8, 1997, Appl. No. 72,877

Claims priority, application Hague Agreement, Nov. 8, 1996, DM/038152

Term of patent 14 years

LOC (6) Cl. 20 - *99*

U.S. Cl. D20—99

410,699

TOY FOOTBALL GAME ASSEMBLY

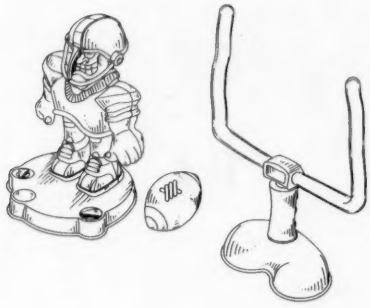
Todd S. Herlitz, 149A Cypress St., Providence, R.I. 02906, and Michael A. Provost, 12 Mount Pleasant View Ave., Cumberland, R.I. 02864

Filed Jun. 1, 1998, Appl. No. 88,747

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—318



410,700

TOY SOCCER GAME ASSEMBLY

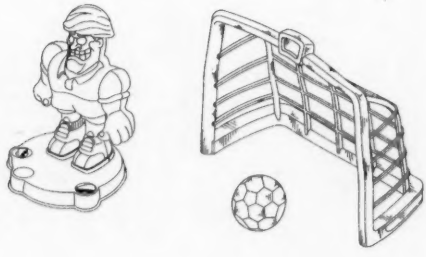
Todd S. Herlitz, 149A Cypress St., Providence, R.I. 02906, and Michael A. Provost, 12 Mount Pleasant View Ave., Cumberland, R.I. 02864

Filed Jun. 1, 1998, Appl. No. 88,748

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—318



410,701

GAME BOARD

Klas Mellander, Malmo, Sweden, assignor to Celemiab International AB, Malmo, Sweden

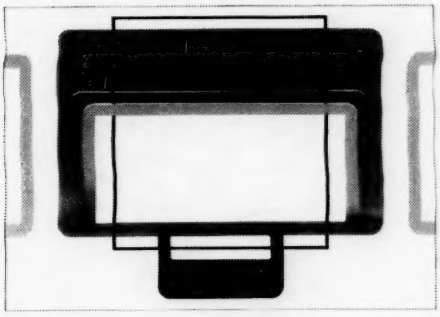
Filed Mar. 5, 1998, Appl. No. 84,553

Claims priority, application United Kingdom, Sep. 5, 1997, D-2068881

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—365



410,702

RATTLE

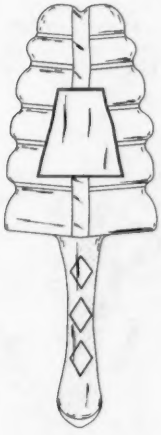
James Randall Spear, 49 Bell Rock Plz., Sedona, Ariz. 86351

Filed Jun. 9, 1998, Appl. No. 89,167

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—406



410,703

TRAVELER HOBBY HORSE

Sandor Gyorgy Kiss, 1201 Devon Dr., Ashtabula, Ohio 44004-2121

Filed Aug. 18, 1997, Appl. No. 75,667

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—416

410,704

TOY BUILDING ELEMENT

Ricco Reinholdt Krog, Vejen, Denmark, assignor to INTER-LEGO AG, Baar, Switzerland

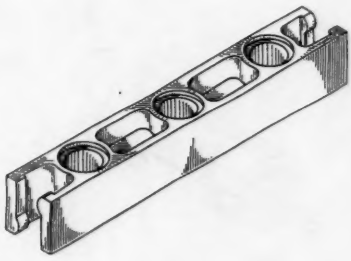
Filed Sep. 17, 1998, Appl. No. 93,736

Claims priority, application Denmark, Mar. 18, 1998, MA02971998

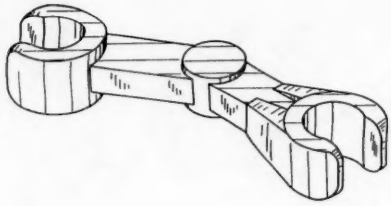
Term of patent 14 years

LOC (6) Cl. 21 - *01*

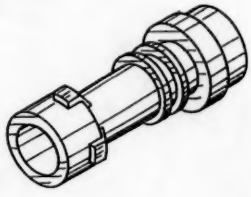
U.S. Cl. D21—486



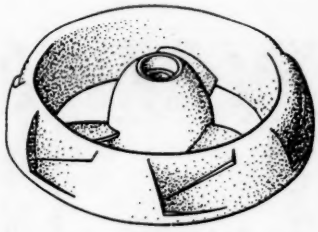
410,705
TOY BUILDING ELEMENT
Uffe K. Toft, Aarhus C, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Oct. 14, 1998, Appl. No. 94,965
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—486



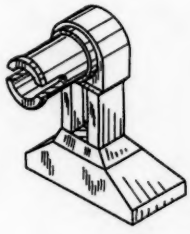
410,706
TOY BUILDING ELEMENT
Uffe K. Toft, Aarhus C, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Oct. 14, 1998, Appl. No. 94,999
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—487



410,707
TOY BUILDING ELEMENT
Ricco Reinholdt Krog, Vejen, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Sep. 17, 1998, Appl. No. 93,731
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—488



410,708
TOY BUILDING ELEMENT
Uffe K. Toft, Aarhus, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Oct. 14, 1998, Appl. No. 94,994
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—503



410,709

ROOF WALK FOR MODEL RAILWAY CAR

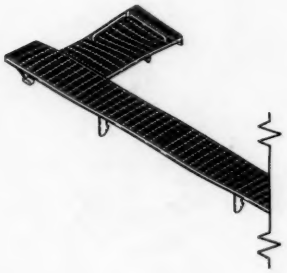
Lawrence D. Edwards, Eagle Point, Oreg., assignor to Kadee Quality Products Co., White City, Oreg.

Filed Mar. 11, 1998, Appl. No. 84,848

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—561



410,710

TOY

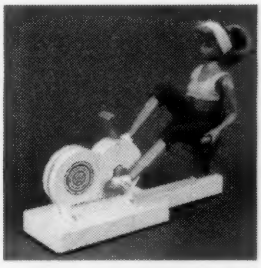
Hing-Sang Wong, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Takmay Industrial Co., Ltd., Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China

Filed Mar. 31, 1998, Appl. No. 85,880

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—594



410,711

TALKING DOLL THAT PROVIDES MOTIVATIONAL MESSAGES FOR CHILDREN

Michale A. Kester, and Karen Sue Kester, both of 1181 Del-Mar Pkwy., Aurora, Colo. 80010

Filed Jan. 12, 1998, Appl. No. 81,909

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—648

410,712

PHYSICAL EXERCISE APPARATUS

Adrian Giger; Sonja Giger; Urs Giger, all of Tugginerweg 3, 4503 Solothurn, and Thomas Giger, Poststrasse 14, 4500 Solothurn, all of Switzerland

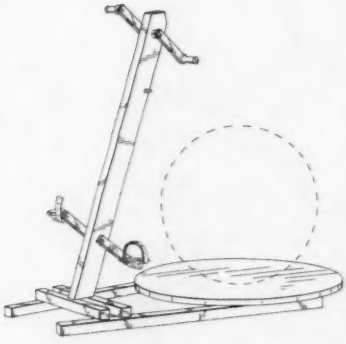
Filed Jan. 21, 1998, Appl. No. 85,068

Claims priority, application Hague Agreement, Jul. 24, 1997, DM/040886

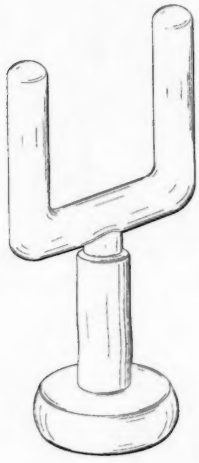
Term of patent 14 years

LOC (6) Cl. 21 - *02*

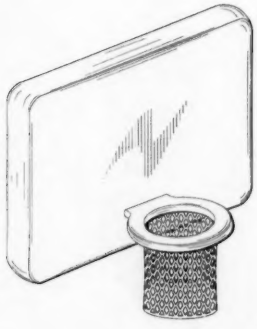
U.S. Cl. D21—665



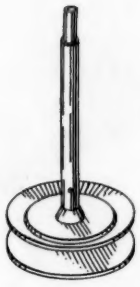
410,713
INFLATABLE FOOTBALL GOAL
Jeffrey Stephen Sherwood, and Robert J. Howard, both of Alpharetta, Ga., assignors to International Buying Corporation, Alpharetta, Ga.
Filed Jul. 21, 1998, Appl. No. 91,000
Term of patent 14 years
LOC (6) Cl. 21 - *99*
U.S. Cl. D21—699



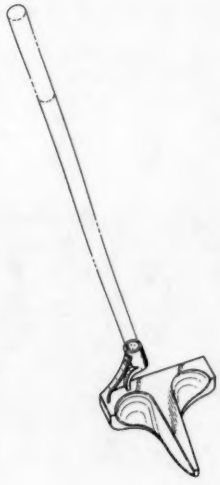
410,714
INFLATABLE BASKETBALL BACKBOARD
Jeffrey Stephen Sherwood, and Robert J. Howard, both of Alpharetta, Ga., assignors to International Buying Corporation, Alpharetta, Ga.
Filed Jul. 29, 1998, Appl. No. 91,409
Term of patent 14 years
LOC (6) Cl. 21 - *99*
U.S. Cl. D21—701



410,715
COMBINED BALL SUPPORT AND TARGET FOR A BAT AND PUTT GAME
Larry C. Cramton, Route #4, Box 102, Marlow, Okla. 73055
Filed Mar. 18, 1998, Appl. No. 85,147
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—715



410,716
GOLF CLUB PUTTER HEAD
Christopher J. Bendo, 12203 Roxbury, Tecumseh, Ontario, Canada, N8N 4M8, and Euclid Cecchin, 3490 Victoria Boulevard, Windsor, Ontario, Canada, N9E 3L2
Filed Apr. 9, 1998, Appl. No. 86,301
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—736



410,717

GOLF PUTTER HEAD

Douglas W. Anderson, Glendale, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.

Filed Jan. 26, 1998, Appl. No. 82,539

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—738

410,718

INSERT GOLF PUTTER HEAD

Brent Christensen, 15235 NE. 92nd St., Redmond, Wash. 98052-3518

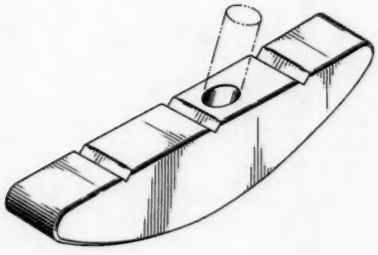
Filed Jul. 13, 1998, Appl. No. 90,602

This patent is subject to a terminal disclaimer

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—744



410,719

BACK SURFACE FOR AN IRON-TYPE GOLF CLUB HEAD

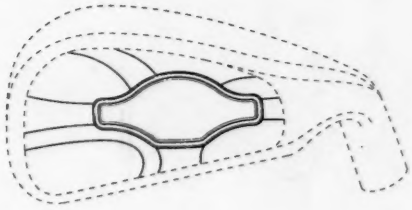
Augustin W. Rollinson; Roger C. Cleveland; Thomas R. Hilton, and Kevin L. Napolitano, all of Carlsbad, Calif., assignors to Callaway Golf Company, Carlsbad, Calif.

Filed Nov. 12, 1997, Appl. No. 79,337

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—753



410,720

PIVOTING IN LINE SKATE SUPPORT

Dodd H. Grande, Seattle, Wash., assignor to K-2 Corporation, Vashon, Wash.

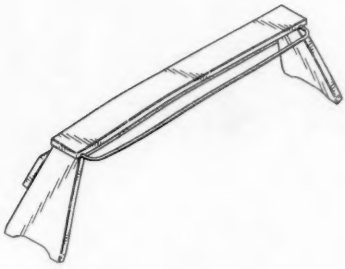
Filed Jan. 23, 1998, Appl. No. 82,640

Term of patent 14 years

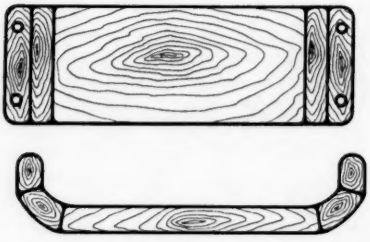
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—772

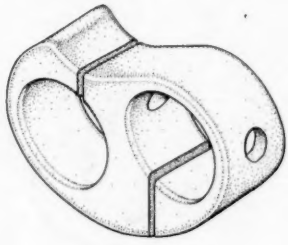
410,721
PUTT RAIL
Walter R. Trapp, 900 E. Fourth St., Tuscumbia, Ala. 35674; Kenneth D. Cakebread, 9996 Clemmons Rd., and Thomas F. Pebworth, Jr., 941 Willingham Rd., both of Florence, Ala. 35630
Filed Dec. 29, 1997, Appl. No. 81,298
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—791



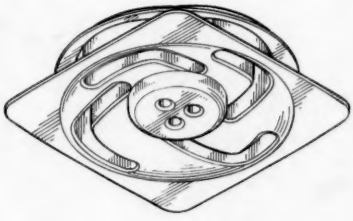
410,722
RECREATIONAL SWING SEAT
Robert W. Davignon, II, 67 Deanville Rd., Attleboro, Mass. 02703
Filed Apr. 20, 1998, Appl. No. 86,788
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—823



410,723
MOUNT FOR SECURING A SIGHTING LIGHT TO A FIREARM
Mark S. Edgar, P.O. Box 399, Clarkston, Wash. 99403
Filed Feb. 13, 1998, Appl. No. 83,658
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—110



410,724
INSECT BAIT STATION
Jorge Robles, San Ramon, Calif., and Michael O. Cox, Brandon, Miss., assignors to The Clorox Company, Oakland, Calif.
Filed Jul. 16, 1998, Appl. No. 90,843
Term of patent 14 years
LOC (6) Cl. 22 - *06*
U.S. Cl. D22—122



410,725

LINE GUIDE FOR FISHING ROD

Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka-ken, Japan

Filed Oct. 15, 1997, Appl. No. 78,768

Claims priority, application Japan, May 16, 1997, 9-54664

This patent is subject to a terminal disclaimer

Term of patent 14 years

LOC (6) Cl. 22 - *05*

U.S. Cl. D22—143

410,726

PORTABLE WATER PURIFICATION APPARATUS

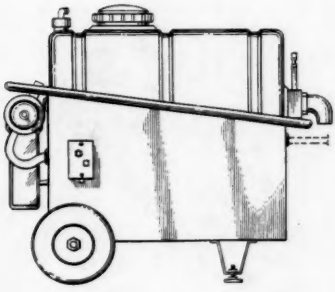
James E. Cook, Anoka, Minn., assignor to Pure Rinse Systems, Inc, Brooklyn Park, Minn.

Filed Oct. 2, 1998, Appl. No. 94,475

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—207



410,727

INLET FILTER

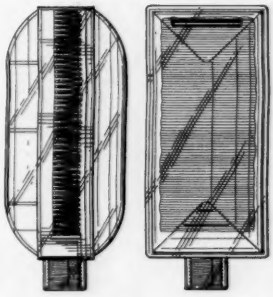
Chaouki A. Khamis, St. Anthony; Carl M. Geisz, St. Paul, both of Minn.; Daniel M. Spearman, and Michael R. Spearman, both of The Woodlands, Tex., assignors to Porous Media Corporation, St. Paul, Minn.

Filed Jun. 26, 1998, Appl. No. 89,961

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—209



410,728

FAUCET MOUNT WATER FILTER UNIT

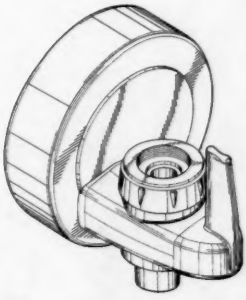
Mark Kurth; William Cowles, both of Chicago; Richard Riback, Deerfield, and Jeffrey Bull, Chicago, all of Ill., assignors to Omni Corporation, Hammond, Ind.

Filed Jul. 30, 1998, Appl. No. 91,436

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—209



410,729

SHOWER HEAD

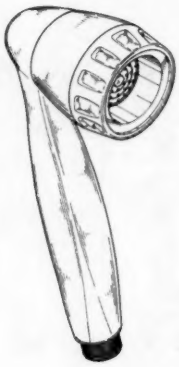
Chen-Yueh Fan, Room F/23, 4th Fl., No. 5, Sec. 5, Hsinyi Rd., Taipei, Taiwan

Filed Aug. 18, 1998, Appl. No. 92,416

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—223



410,730

BANANA-SHAPED SPRAY GUN

King-Yuan Wang, Changhua Hsien, Taiwan, assignor to Yuan Mei Corp., Changhua Hsien, Taiwan

Filed Oct. 6, 1998, Appl. No. 94,620

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—223

410,731

SPRINKLER HEAD GUARD

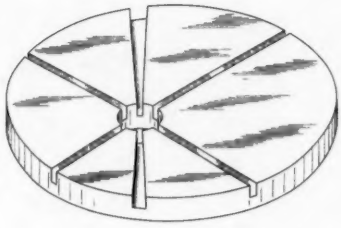
Kenneth Wayne Bowman, and Ronnie Buggs, both of 650 Stoneybrook Dr., Apt. 241, Carrona Hills, Calif. 91719

Filed Jan. 2, 1998, Appl. No. 81,470

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—227



410,732

SPRAY HEAD

Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe AG, Hemer, Germany

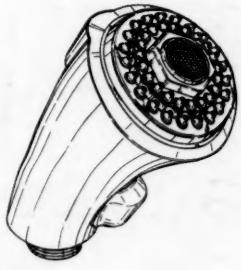
Filed Jun. 24, 1998, Appl. No. 89,849

Claims priority, application Germany, Feb. 2, 1998, 98 00 877

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—229



410,733

ONE WAY VALVE BODY

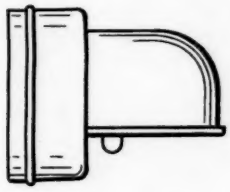
Chi Chuen Kan, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Wealthy Way International Limited, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China

Filed Sep. 15, 1997, Appl. No. 76,631

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—233



410,734

FUEL VALVE

Wayne Pingel, and Donna Pingel, both of Adams, Wis., assignors to Pingel Enterprise, Inc., Adams, Wis.

Filed Aug. 3, 1998, Appl. No. 91,625

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—233

410,735

SINK FAUCET

Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe AG, Hemer, Germany

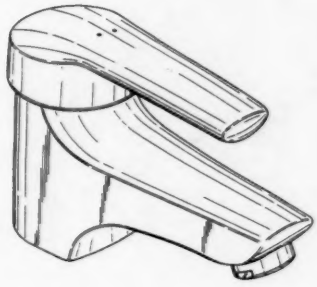
Filed Jul. 29, 1998, Appl. No. 91,376

Claims priority, application Germany, Feb. 19, 1998, M 98 01 732

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—238



410,736

PLUMBING FIXTURE HANDLE

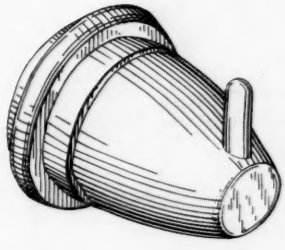
Erich D. Slothower, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Division of application No. 29/049,417, Jan. 24, 1996. This application Jul. 28, 1998, Appl. No. 91,369.

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—250



410,737

LEVER HEAD FOR A FAUCET

Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe AG, Hemer, Germany

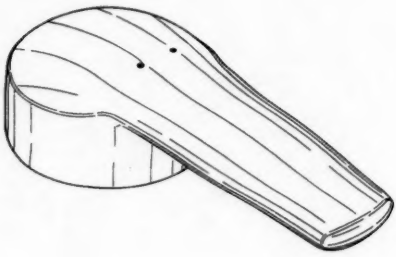
Filed Jul. 29, 1998, Appl. No. 91,375

Claims priority, application Germany, Feb. 19, 1998, M 98 01 732

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—250



410,738

FAUCET SPOUT AND BODY

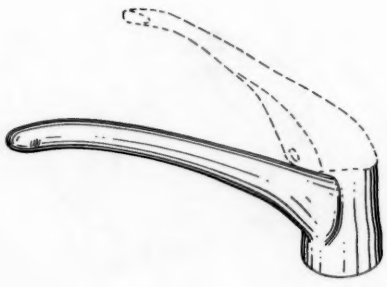
John Hyde, Flemington, and Wilfried A. Delker, Bridgewater, both of N.J., assignors to American Standard Inc., Piscataway, N.J.

Filed Apr. 16, 1998, Appl. No. 86,602

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—255



410,739

CHILDREN'S PORTABLE POTTY

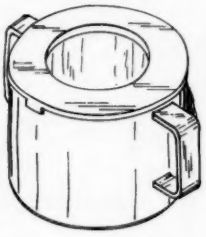
Tammie A. Reeves-Artison, and Kenneth B. Artison, both of 4011 Windermere Dr., Memphis, Tenn. 38128

Filed Jul. 8, 1998, Appl. No. 90,409

Term of patent 14 years

LOC (6) Cl. 23 - *02*

U.S. Cl. D23—299



410,740

PEDIATRIC CATHETER CONNECTOR

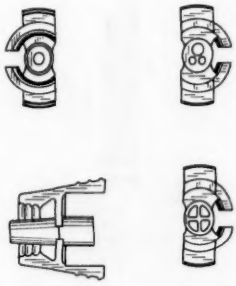
Roger V. Molina, Summerfield, N.C., assignor to Incutech, Inc., Kernersville, N.C.

Division of application No. 29/079,287, Nov. 12, 1997, Pat. No. Des. 399,559. This application May 11, 1998, Appl. No. 87,901.

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—108



410,741

MALE IMPOTENCE AID

John L. Chaney, 156 Broad St. Box 790, Lake Geneva, Wis. 53147

Filed Apr. 21, 1997, Appl. No. 68,972

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—143

410,742

STRAP-ON MALE PROSTHESIS

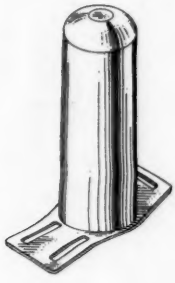
David L. Coolidge, 118 Industrial Way, Unit A Corona, Calif. 91720

Filed Jun. 19, 1998, Appl. No. 89,635

Term of patent 14 years

LOC (6) Cl. 24 - *03*

U.S. Cl. D24—155



410,743

PHYSICAL THERAPY BOARD

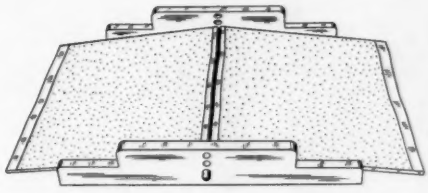
John H. Mekjian, 35959 Elmira, Livonia, Mich. 48150

Filed Aug. 15, 1997, Appl. No. 74,979

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—183



410,744

LUMBAR SUPPORT

Nevin D. Banister, 6621 Kenwood Ave., Dallas, Tex. 75214

Filed May 4, 1998, Appl. No. 87,461

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—183

410,745

MEDICAL UNIT FOR MEASURING URINE FLOW RATE

Francois Jacobus Retief, Mossel Bay, South Africa, assignor to Prostaflo Limited, Durbanville, South Africa

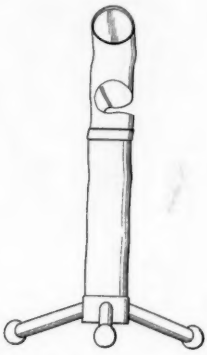
Filed Aug. 5, 1997, Appl. No. 74,996

Claims priority, application South Africa, Feb. 5, 1997, A97/0107

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—186



410,746

HEEL ELEVATOR

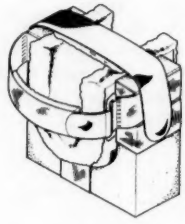
Stephen J. Klein, Cordova, Tenn., assignor to Tharos LLC, Cordova, Tenn.

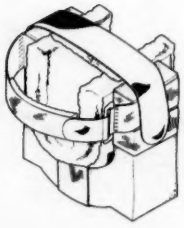
Filed Mar. 20, 1998, Appl. No. 85,309

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—192





410,747

BABY PACIFIER

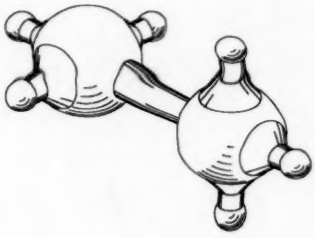
Toby Wexler, 303 Paddington Dr., Lafayette, La. 70508-7145

Filed Mar. 16, 1998, Appl. No. 85,044

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—194



410,748

ELECTRICAL CONTROL UNIT FOR MASSAGING APPARATUS

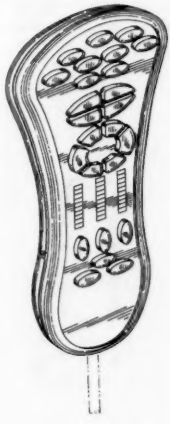
David Grey Hunsucker, Morristown, Tenn.; Mark J. Raffel, Port Washington, Wis., and Anand Sagar Jain, Mississuaga, Canada, assignors to The Berkline Corporation, Morristown, Tenn.

Filed Jun. 17, 1998, Appl. No. 89,538

Term of patent 14 years

LOC (6) Cl. 24 - *04*

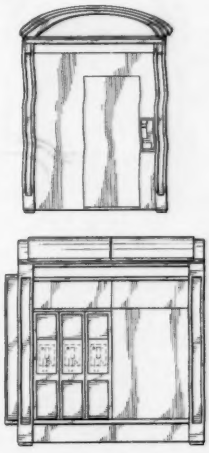
U.S. Cl. D24—200



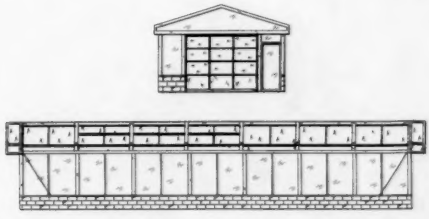
410,749
THERMAL PACK
Ann Podd, 1715 SW. Second Ave., Boca Raton, Fla. 33432
Filed Feb. 3, 1998, Appl. No. 83,033
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—208

410,750
DOG SHAPED THERMAL PACK
Ann Podd, 1715 SW. Second Ave., Boca Raton, Fla. 33432
Filed Feb. 3, 1998, Appl. No. 83,036
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—208

410,751
SHELTER
Richard Meier, New York, N.Y., assignor to More Group PLC, London, United Kingdom
Filed Oct. 17, 1997, Appl. No. 77,986
Claims priority, application United Kingdom, Apr. 17, 1997, 2064989
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D25—16



410,752
BUILDING STRUCTURE WITH TRANSPARENT PANELS
Michael L. Kinslow, 3020 Santiago Dr., Greenwood, Ind. 46143, and Norman Siegel, 9048 Yellowwood Ct., Indianapolis, Ind. 46260
Filed Jul. 6, 1998, Appl. No. 90,320
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D25—34



410,753

RAIL

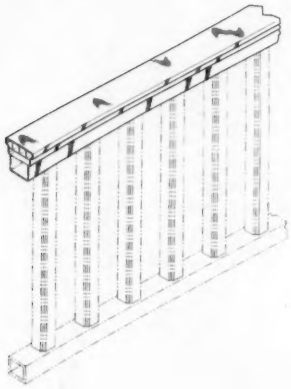
Harry H. Davis, Mooresville, N.C., assignor to L.B. Plastics Limited, Darby, United Kingdom

Filed Aug. 12, 1998, Appl. No. 92,080

Term of patent 14 years

LOC (6) Cl. 25 - *02*

U.S. Cl. D25—38



410,754

ROOF FOR A SHELTER

Kenneth Henry Grange, London, United Kingdom, assignor to More Group PLC, London, United Kingdom

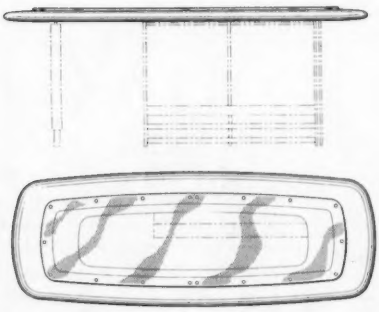
Filed May 14, 1998, Appl. No. 88,037

Claims priority, application United Kingdom, Nov. 14, 1997, 2070516

Term of patent 14 years

LOC (6) Cl. 25 - *02*

U.S. Cl. D25—56



410,755

BUILDING ELEMENT

Gunnar B. Weisshappel, Vallensbaek Strand, Denmark, assignor to Helga Fridriksdottir, Vallensback Strand, Denmark

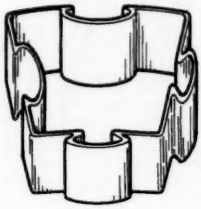
Filed May 27, 1997, Appl. No. 71,463

Claims priority, application Denmark, Nov. 27, 1996, MA 1161 1996

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—114



410,756

CANDLE HOLDER

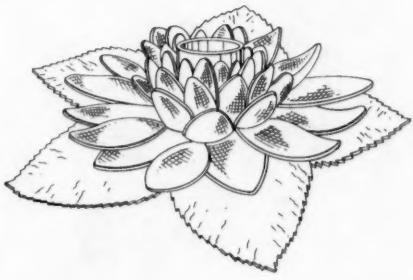
Ira J. Kleinberg, Great Neck, N.Y., assignor to Reliance Trading Corporation of America, Blue Island, Ill.

Filed Sep. 3, 1998, Appl. No. 93,209

Term of patent 14 years

LOC (6) Cl. 26 - *04*

U.S. Cl. D26—9

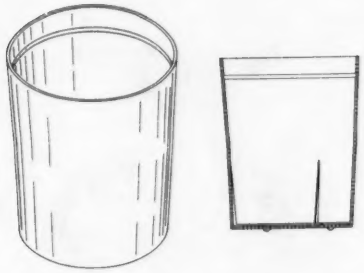


410,757

CANDLE MELT GUARD

Carol A. Clark, 2737 Fox Fire Ct., Clearwater, Fla. 33761

Filed Aug. 27, 1997, Appl. No. 75,811
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—23

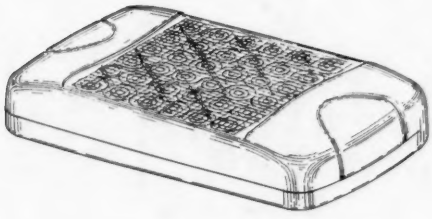


410,758

VEHICLE LAMP

Martin Carl Friedrich Reinbach, Auckland, New Zealand, assignor to Hella Asia Pacific Pty Ltd, Australia

Filed Jul. 13, 1998, Appl. No. 90,701
Claims priority, application Australia, Jan. 15, 1998, 77/98
Term of patent 14 years
LOC (6) Cl. 26 - *06*
U.S. Cl. D26—28

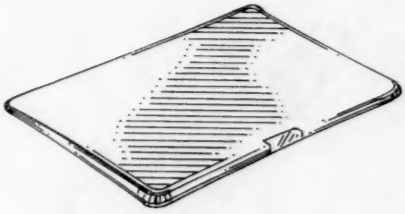


410,759

TAPERED CARD LIGHT

Thomas G. Petruzzi, 5118 Belleville Ave., Orlando, Fla. 32812

Filed May 19, 1998, Appl. No. 88,257
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—37

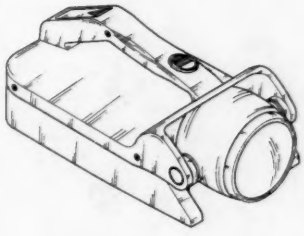


410,760

COMBINED FLASHLIGHT AND TOOL BOX

Ghing Hsiu Yao, P.O. Box 63-99, Taichung, Taiwan

Filed Jul. 10, 1998, Appl. No. 90,581
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—38

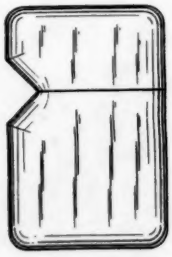


410,761
FLASHLIGHT
Si Fu Chiu, Unit 10, 19th Floor, Technology Plaza,29-35 Sha Tsui Road, Tsuen Wan, New Territories, The Hong Kong Special Administrative Region of the People's Republic of China
Filed Jul. 16, 1998, Appl. No. 90,798
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—49

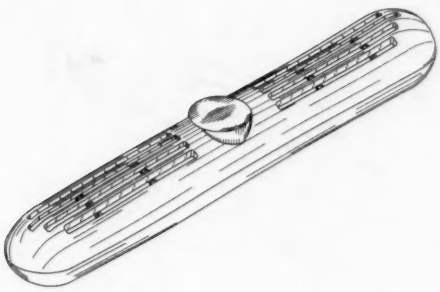
410,762
CHANDELIER ARM
Pasquale Miranda, 154 Sleepy Hollow Rd., Briarcliff Manor, N.Y. 10510
Filed Jul. 10, 1998, Appl. No. 90,515
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—145

410,763
LIGHTING FIXTURE BOBECHE
Pasquale Miranda, 154 Sleepy Hollow Rd., Briarcliff Manor, N.Y. 10510
Filed Oct. 10, 1997, Appl. No. 77,852
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—149

410,764
CASE FOR A CIGARETTE LIGHTER
Kent S. Wilson, Kane, Pa., assignor to Holgate Toy Company, Kane, Pa.
Filed Aug. 24, 1994, Appl. No. 27,567
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—172

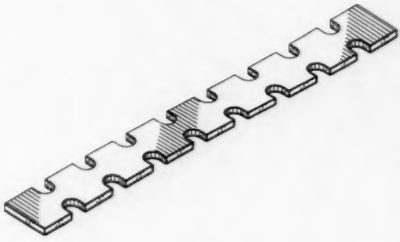


410,765
CIGAR HUMIDIFIER
Fred T. Gawryk, 4137 N. Dickinson Ave., Chicago, Ill. 60641, assignor to Fred T. Gawryk, Chicago, Ill.
Filed Nov. 18, 1997, Appl. No. 79,510
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—189



410,766
THERMAL BRUSH IRON
Leandro P. Rizzuto, Sheridan, Wyo., and Hou On Lo, Tai Tam, The Hong Kong Special Administrative Region of the People's Republic of China, assignors to Conair Corporation, Stamford, Conn.
Filed Aug. 20, 1998, Appl. No. 92,496
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—35

410,767
HAIR BOW ORGANIZER
Lorna J. Carroll, 1635 Roosevelt, Memphis, Tenn. 38127
Filed Jan. 23, 1997, Appl. No. 65,474
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—73



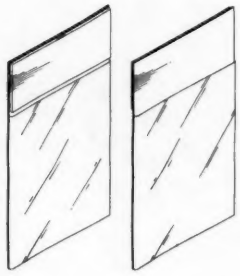
410,768
SOCCER HELMET
Donald W. Hirsh, 11206 Odell Farms Ct., Beltsville, Md. 20705
Filed May 28, 1998, Appl. No. 88,581
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—102

410,769

STORAGE HOLDER/PROTECTOR

Peter (Panagiotis) G. Dorizas, 22 Killarney Drive, Killarney Heights, Sydney, NSW 2087, Australia

Filed Aug. 12, 1996, Appl. No. 59,685
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—201

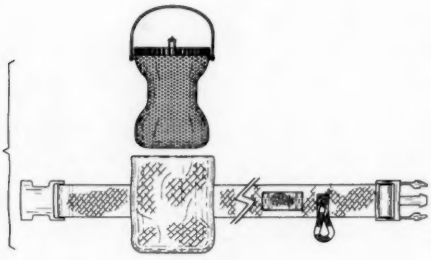


410,770

BEVERAGE BOTTLE WITH CARRYING DEVICE

Maria A Bergara, 1115 Hwy. 146 N., Apt. 114, Texas City, Tex. 77590

Filed Jan. 8, 1998, Appl. No. 81,696
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—202

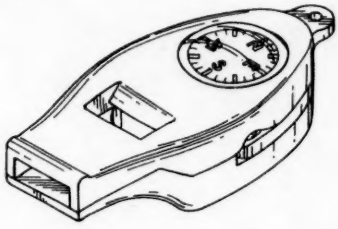


410,771

HOLDER FOR KEY RING

Gin-Sung Chang, No. 229-21, Kuang-Ming Rd., Chien-Chu Tsun, Chien-Chu Tsun, Wu-Jih Hsiang, Taichung Hsien, Taiwan

Filed Jun. 12, 1998, Appl. No. 89,337
Claims priority, application Taiwan, May 21, 1997, 87303758
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—208

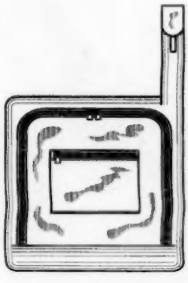


410,772

SPORTS PACK

Ed Rohrscheib, 709 Fruitdale Rd., Sedro-Woolley, Wash. 98284

Filed Jun. 11, 1998, Appl. No. 89,242
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—221



410,773

TOOL POUCH

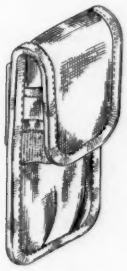
Richard N. Case, Boulder, Colo., assignor to RCP Enterprises, Inc., Boulder, Colo.

Filed Oct. 29, 1998, Appl. No. 95,718

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—228



410,774

WALLET

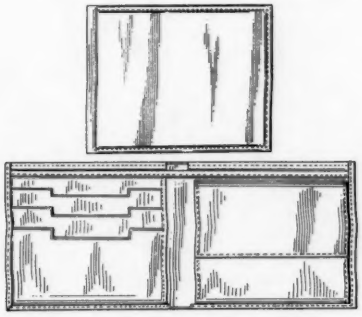
Jocelyne Inbert, Marseilles, France, assignor to Alfred Dunhill Limited, London, United Kingdom

Filed May 12, 1998, Appl. No. 87,960

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—250



410,775

SNOW RACER CARRIER

Arthur Augustus Halbot, Jr., 164 Bayview Ave., Keswick, Ontario, Canada, L4P 2S9

Filed Apr. 17, 1997, Appl. No. 69,815

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—254

410,776

TOOLBOX CASE

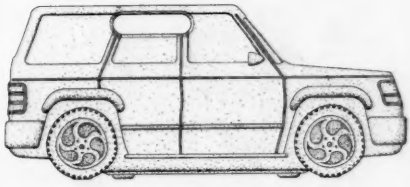
Areg Aganian, Santa Clarita, Calif., assignor to AWI Acquisition Company, Sylmar, Calif.

Filed Aug. 8, 1997, Appl. No. 74,648

Term of patent 14 years

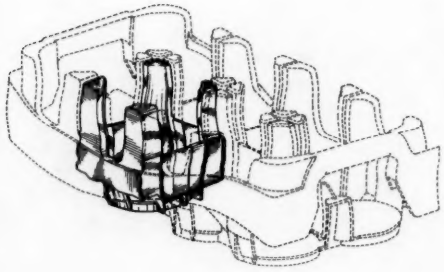
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—271

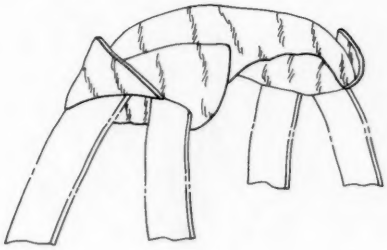


410,777
COMPACT CHILD PLAY AREA STORAGE CASE
Vladimiro Pizzi, Scanzorosciate, Italy, and Robert A. Nielsen, Exeter, Calif., assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Nov. 9, 1995, Appl. No. 46,235
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—279

410,778
COMPARTMENT STRUCTURE OF BOTTLE CASE
William P. Apps, Alpharetta, and Gerald R. Koefelda, Atlanta, both of Ga., assignors to Rehrig Pacific Company, Los Angeles, Calif.
Division of application No. 29/067,185, Feb. 28, 1997, Pat. No. Des. 395,954, which is a division of application No. 29/039,952, Jun. 7, 1995, Pat. No. Des. 378,249, which is a continuation-in-part of application No. 29/037,469, Apr. 13, 1995, Pat. No. Des. 380,901, which is a continuation-in-part of application No. 29/018,317, Feb. 3, 1994, Pat. No. Des. 361,431, and application No. 29/034,317, Feb. 1, 1995, Pat. No. Des. 379,717, which is a continuation-in-part of application No. 07/919,376, Jul. 29, 1992, Pat. No. 5,529,176. This application Jan. 8, 1998, Appl. No. 81,729.
Term of patent 14 years
LOC (6) Cl. 03 - *99*
U.S. Cl. D3—318



410,779
HANDLE GRIPPER
Sue Hannah, Newark, Ohio, assignor to The Longaberger Company, Newark, Ohio
Filed Feb. 24, 1998, Appl. No. 84,100
Term of patent 14 years
LOC (6) Cl. 03 - *99*
U.S. Cl. D3—318



410,780
FOOD DISH FOR BIRDS
Glenn H. McGinty, Denver, Colo., assignor to JungleTalk International, Inc., Denver, Colo.
Filed Jul. 10, 1998, Appl. No. 90,536
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—124

410,781

ELEVATED PET FEEDER

Arie Sharon, 7302 Shawn Dr., Rowlett, Tex. 75088

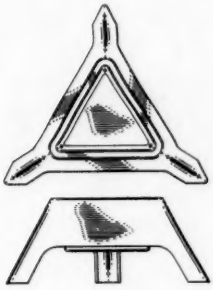
Filed Feb. 13, 1998, Appl. No. 83,628

This patent is subject to a terminal disclaimer

Term of patent 14 years

LOC (6) Cl. 30 - *03*

U.S. Cl. D30—129



410,782

LID FOR AUXILIARY DUST REMOVAL RECEPTACLE

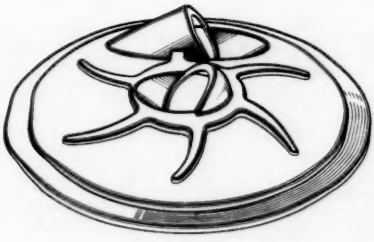
Matthew Bruce Siemers, Ottawa, Canada, assignor to Lee Valley Tools Ltd., Ottawa, Canada

Filed Apr. 7, 1998, Appl. No. 86,165

Term of patent 14 years

LOC (6) Cl. 15 - *05*

U.S. Cl. D32—25



410,783

ROLLER MOP HEAD

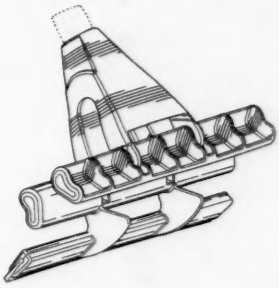
William P. Camp, Jr., Wooster, and Charles Sven Johnson, Copley, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed May 26, 1998, Appl. No. 88,475

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D32—44



410,784

FISHING STOOL CART

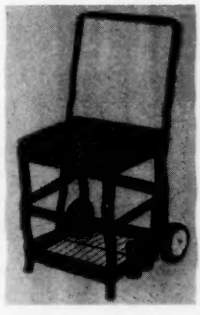
Jonathan Sandford, 1719 E. Outer Dr., Detroit, Mich. 48234; Wanda D Nelson, 17593 Stahelin, Detroit, Mich. 48219; Jonnie M. Jackson, 19315 Mitchell, Detroit, Mich. 48234, and Darlene S Taylor, 27505 Arlington Ct., Southfield, Mich. 48076

Filed Aug. 12, 1998, Appl. No. 92,097

Term of patent 14 years

LOC (6) Cl. 12 - *02*

U.S. Cl. D34—14



410,785

CART FOR A HAND-HELD BLOWER

Jeremy D. Leasure, Charlotte, and Harold M. Bigham, Monroe, both of N.C., assignors to Deere & Company, Charlotte, N.C.

Filed Aug. 24, 1998, Appl. No. 92,610

Term of patent 14 years

LOC (6) Cl. 12 - *02*

U.S. Cl. D34—24

410,786

PALLET

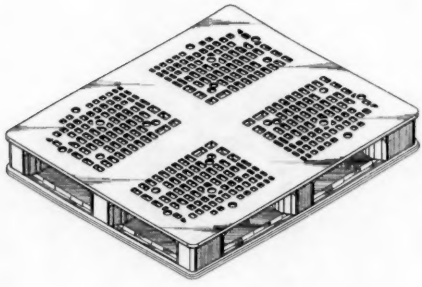
James Favaron, Clifton Park, N.Y., and Robert Funk, Anoka, Minn., assignors to EPC Loudon, Mora, Minn.

Filed Oct. 7, 1997, Appl. No. 77,614

Term of patent 14 years

LOC (6) Cl. 09 - *08*

U.S. Cl. D34—38



410,787

TOOTHBRUSH HANDLE

Bertrand Dominique Barre, Limonest, and Francis Lepage, Lyons, both of France, assignors to Chesebrough-Pond's USA Co. Division of Conopco, Inc., Greenwich, Conn.

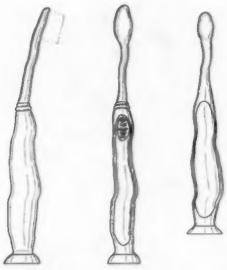
Filed May 7, 1997, Appl. No. 71,001

Claims priority, application Hague Agreement, Nov. 8, 1996, DM/003508

Term of patent 14 years

LOC (6) Cl. 04 - *02*

U.S. Cl. D4—104



410,788

TOOTHBRUSH HANDLE

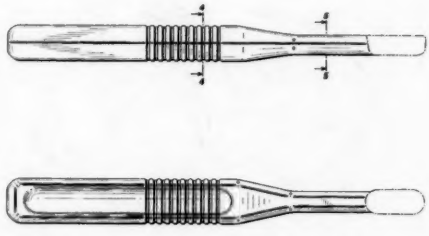
Fabio Eduardo Franca Rangel, Rua 3 de Abril n° 149, Jardim Leonidia, Jacarei; Luiz Bellino Simionato, Rua Esperanca n° 227 apto 801, vila Ady-Anna, Sao Jose dos Campos, and Bernard Reinesch, Avenida Cidade, Jardim No. 3141, apt° 119 Sao Jose dos Campos, all of Sao Paulo, Brazil

Continuation of application No. 29/065,080, Jan. 21, 1997, abandoned. This application Feb. 23, 1998, Appl. No. 84,002.

Term of patent 14 years

LOC (6) Cl. 04 - *02*

U.S. Cl. D4—104



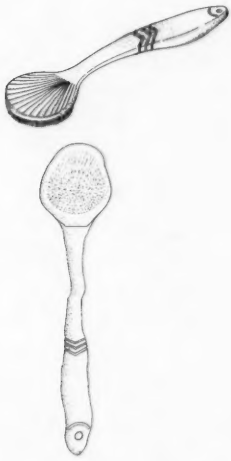
410,789

BRUSH

Tien-Fu Cheng, No. 90, Huan Ho St., His Chi, Taipei Hsien, Taiwan

Filed Aug. 28, 1998, Appl. No. 92,871
Term of patent 14 years
LOC (6) Cl. 04 - *02*

U.S. Cl. D4—127



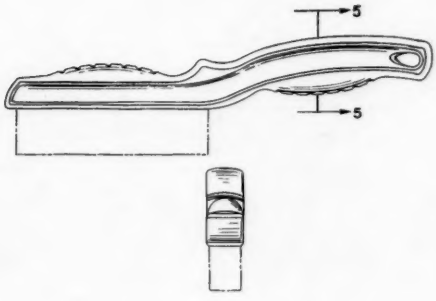
410,790

SCRATCH BRUSH HANDLE

Paul T. King, and Christopher B. Houghton, both of Chicago, Ill., assignors to Wright-Bernet, Inc., Hamilton, Ohio

Filed Jan. 20, 1998, Appl. No. 82,258
Term of patent 14 years
LOC (6) Cl. 04 - *01*

U.S. Cl. D4—138



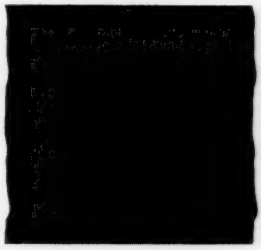
410,791

PATTERN FOR A PLASTIC MATRIX SURFACING MATERIAL

Jorge Alfonso, Pasadena; Leonard Elbon, Glen Burnie, and Donald W. Finnerty, Pasadena, all of Md., assignors to International Paper Company, Odenton, Md.

Filed Dec. 29, 1997, Appl. No. 81,278
This patent is subject to a terminal disclaimer
Term of patent 14 years
LOC (6) Cl. 05 - *06*

U.S. Cl. D5—62



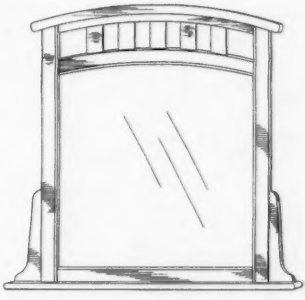
410,792

MIRROR

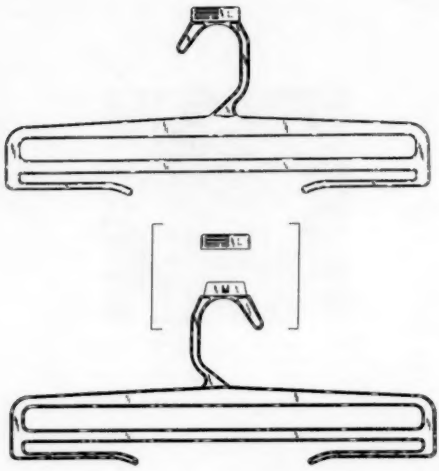
S. Paul Zaidman, Winnipeg, Canada, assignor to Palliser Furniture, Winnipeg, Canada

Filed Mar. 31, 1998, Appl. No. 85,816
Term of patent 14 years
LOC (6) Cl. 06 - *07*

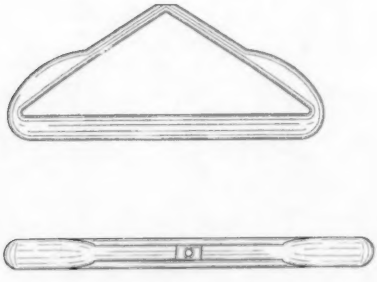
U.S. Cl. D6—300



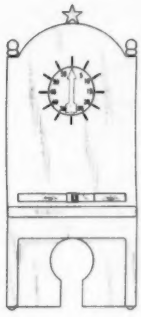
410,793
GARMENT HANGER
Stanley F. Gouldson, Northport, N.Y., assignor to Spotless Plastics Pty. Ltd., Australia
Filed Jul. 8, 1998, Appl. No. 90,433
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—315



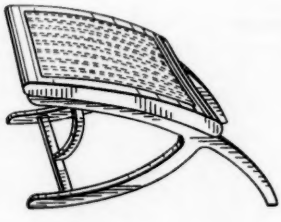
410,794
HANGER PROTECTIVE COVER
Tracie Latice Hendrix, 15840 Joy Rd. #206, Detroit, Mich. 48228
Filed Nov. 13, 1997, Appl. No. 79,412
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—328



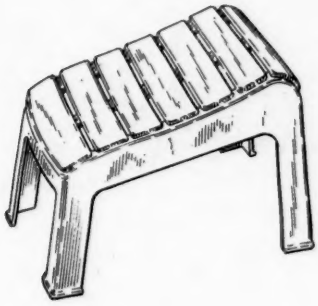
410,795
CHILDS CHAIR WITH ORNAMENTAL TIMING SYSTEM
Helene Fischer Elbein, 1854 S. Arch St., Little Rock, Ark. 72206
Filed Apr. 16, 1998, Appl. No. 86,632
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—333



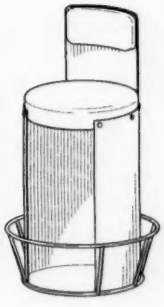
410,796
OTTOMAN
Irving Sabo, Easton, Conn., assignor to Ethan Allen, Inc., Danbury, Conn.
Filed Apr. 3, 1998, Appl. No. 86,075
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—349



410,797
OTTOMAN
Glenn T. Walters, Port Washington, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.
Filed Oct. 5, 1998, Appl. No. 94,525
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—349

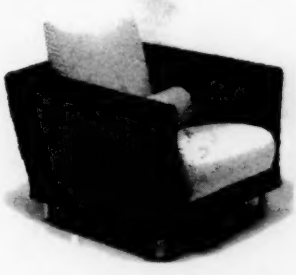


410,798
STOOL
James Geier, and Jim Jobes, both of Chicago, Ill., assignors to 555 Design Fabrication Management, Inc., Chicago, Ill.
Filed Jul. 31, 1997, Appl. No. 74,477
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—360



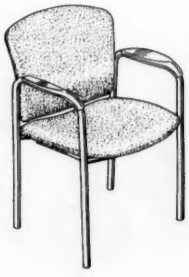
410,799
CHAIR
Alberto Meda, Milan, Italy, assignor to Protoned B.V., Amsterdam, Netherlands
Filed Apr. 7, 1997, Appl. No. 69,356
Claims priority, application Hague Agreement, Oct. 9, 1996, DM/037838
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366

410,800
ARMCHAIR
Didier Gomez, Paris, France, assignor to Roset S.A., Briord, France
Filed Jul. 3, 1997, Appl. No. 73,197
Claims priority, application Hague Agreement, Jan. 9, 1997, DM/038757
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—369

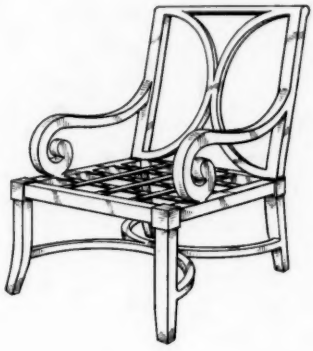


410,801
CHAIR WITH ARM RESTS
Richard M. Holbrook, Pasadena, Calif., assignor to Virco Mfg. Corporation, Torrance, Calif.
Filed May 15, 1998, Appl. No. 88,136
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—373

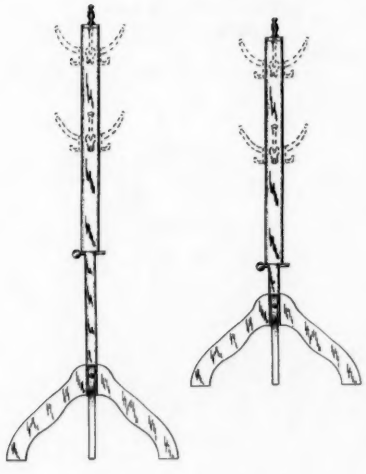
410,802
CHAIR
Ogden R. Olson, Muscatine, Iowa, assignor to HON Technology Inc., Muscatine, Iowa
Filed Jun. 5, 1998, Appl. No. 89,030
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—379



410,803
UPRIGHT CHAIR
Michael Lawrence Kreiss, Rancho Santa Fe, Calif., assignor to Kreiss Enterprises, Inc., San Diego, Calif.
Filed Jun. 25, 1998, Appl. No. 89,883
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—379



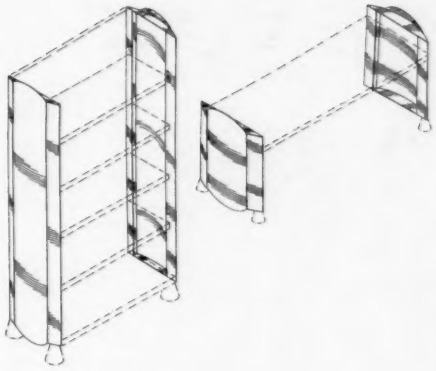
410,804
COAT RACK
Joseph E. Murray, 21 Arlington St., Auburn, Mass. 01501
Filed Oct. 15, 1998, Appl. No. 95,062
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—455



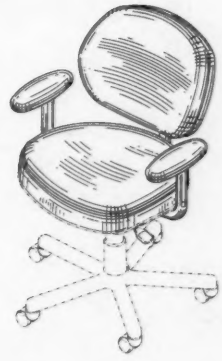
410,805
TROUSER DISPLAY UNIT
Sigurdur John Ludviksson, Einarsnei 33, 101 Reykjavik, Iceland
Filed Feb. 18, 1998, Appl. No. 83,925
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—464

410,806
TABLE
Ogden R. Olson, Muscatine, Iowa; Mark Wubben, Sulfur Springs, Tex.; Osama Abusada, Iowa City, and Clayton C. Schmidt, Wilton, both of Iowa, assignors to Hon Technology Inc., Muscatine, Iowa
Filed May 30, 1997, Appl. No. 71,506
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—484

410,807
PAIR OF SIDE PANELS FOR FURNITURE
Jeffery Fear, 4209 Berryman Ave., Los Angeles, Calif. 90066, and James Hayward, 16303 Haas Ave., Torrance, Calif. 90504
Filed Jan. 23, 1998, Appl. No. 82,510
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—492



410,808
CHAIR
Stephen J. Baumann, Oconomowoc; Martin E. Olson Gunderson, and Mark D. Dart, both of Green Bay, all of Wis., assignors to Krueger International, Inc., Green Bay, Wis.
Filed Mar. 6, 1997, Appl. No. 67,531
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—500



410,809

HEADBOARD

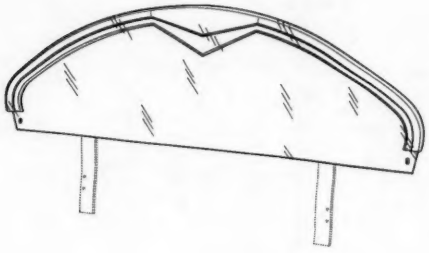
S. Paul Zaidman, Winnipeg, Canada, assignor to Palliser Furniture Ltd., Winnepeg, Canada

Filed Jan. 30, 1998, Appl. No. 82,928

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—505



410,810

ANTI-AGING PILLOW

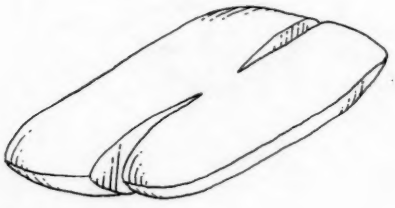
Shahrzad Lozier, 481 White Haven Ct., Severna Park, Md. 21146

Filed Oct. 18, 1995, Appl. No. 45,355

Term of patent 14 years

LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601



410,811

PILLOW

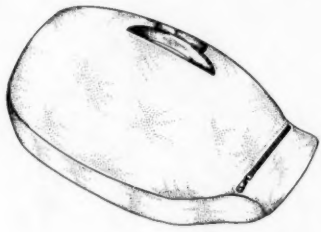
Steve J. Kwan, 89 Westfield Ave., Daly City, Calif. 94015

Filed Apr. 22, 1998, Appl. No. 86,904

Term of patent 14 years

LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601



410,812

BARBEQUE GRILL

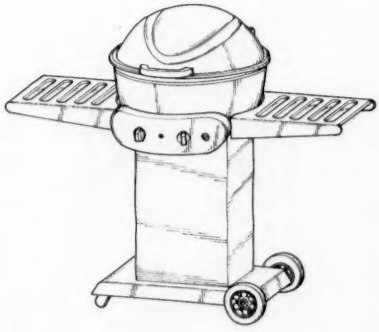
Lucas Pai, 9Fl.-1, No. 160, Sec. 1, Taichungkang Rd., Taichung, Taiwan

Filed Jan. 13, 1998, Appl. No. 82,003

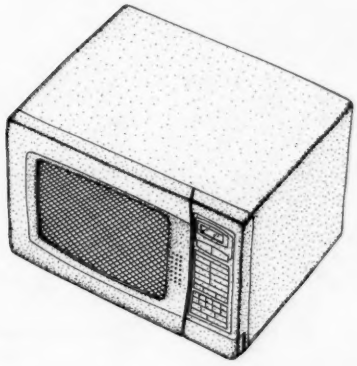
Term of patent 14 years

LOC (6) Cl. 07 - *02*

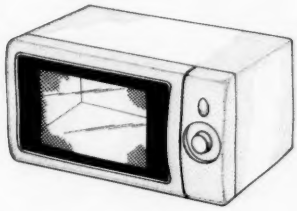
U.S. Cl. D7—334

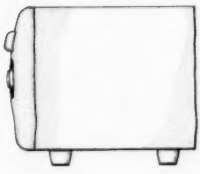


410,813
MICROWAVE OVEN
Nobuhiro Fujii, Osaka-fu, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 3, 1997, Appl. No. 64,512
Claims priority, application Japan, Jul. 8, 1996, 8-20047
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—351

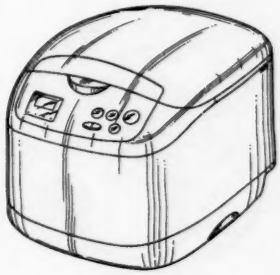


410,814
MICROWAVE OVEN
Takeo Koike, Nara-ken, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 14, 1998, Appl. No. 86,469
Claims priority, application Japan, Oct. 16, 1997, 9-71882
This patent is subject to a terminal disclaimer
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—351

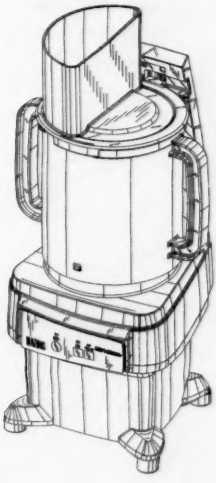




410,815
ELECTRIC COOKER
Hugues Oger, Talant, France, assignor to SEB, Selongey, France
Filed Jun. 20, 1997, Appl. No. 72,652
Claims priority, application France, Dec. 20, 1996, 96 72 79
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—354



410,816
BATCH BOWL CONTINUOUS FEED FOOD PROCESSOR
Donald Crescenzi, Killingworth; Thomas Rockwell, Terryville; Guy Casalino, Weatogue; Frank Chiappetta, Woodbury, and Paul Turnrose, Forestville, all of Conn., assignors to Conair Corporation, Stamford, Conn.
Filed Jan. 5, 1998, Appl. No. 81,491
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—384



410,817

HANDLE FOR COOKING UTENSIL

Harry Brunianyn, Annecy, France, assignor to Tefal S.A., Rumilly, France

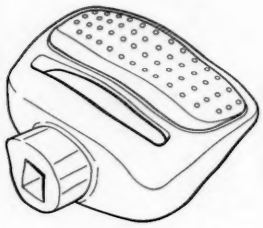
Filed Jul. 10, 1998, Appl. No. 90,572

Claims priority, application France, Jan. 22, 1998, 98 0360

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—393



410,818

BASE FOR AN OUTDOOR GRILL

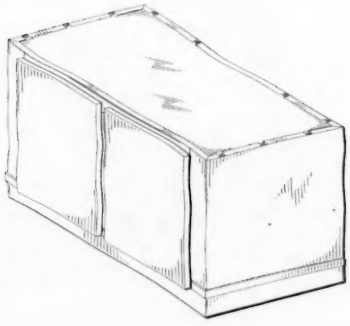
Willie H. Best, 18-C The Heritage, 1829 Senate St., Columbia, S.C. 29201

Filed Dec. 3, 1997, Appl. No. 80,556

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—403



410,819

IGNITER

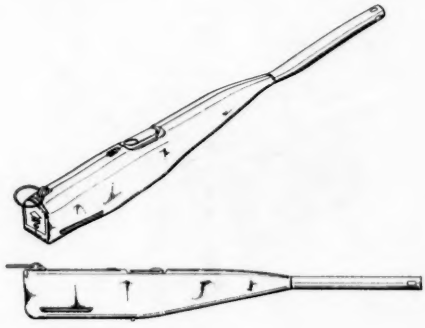
Huang-Hsi Hsu, 8F, No. 14, Lane 252, Chungshan N. Rd., Sec. 6, Taipei, Taiwan

Filed Oct. 20, 1998, Appl. No. 95,281

Term of patent 14 years

LOC (6) Cl. 07 - *99*

U.S. Cl. D7—416



410,820

BUFFET PLATE AND BEVERAGE HOLDER

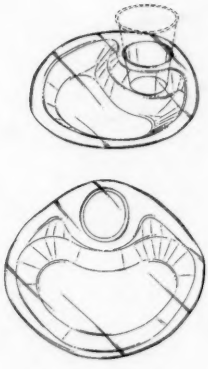
James Lofrano, 2919 Octavia St., San Franciso, Calif. 94123

Filed May 1, 1998, Appl. No. 87,404

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—549

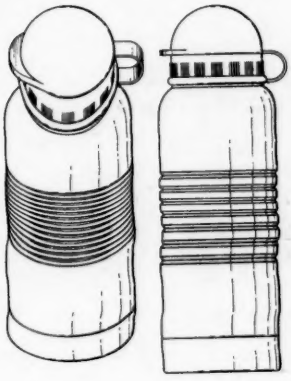


410,821

VACUUM FLASK

Frank T. H. Huang, Suite 804, 8 F1., No. 128, Sec. 3, Ming-Sheng E. Rd., Taipei, Taiwan

Filed Jun. 16, 1998, Appl. No. 89,471
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—608

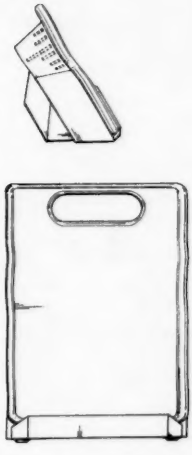


410,822

CUTLERY BLOCK AND CUTTING BOARD

Bruce E. Ancona, New York, and Jose Suero, Jr., Astoria, both of N.Y., assignors to Ekco Housewares, Inc.

Filed Aug. 11, 1997, Appl. No. 76,080
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—638

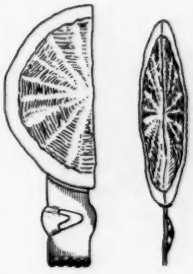


410,823

LEMON ZESTER

Harold Abrams, Montreal, Canada, assignor to Murry Sales Co., Quebec, Canada

Filed Jun. 5, 1998, Appl. No. 89,039
Claims priority, application Canada, Apr. 9, 1998, 1998-0912
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—693



410,824

DECORATIVE STORAGE DEVICE FOR A GARDEN HOSE

Charles D. Kownacki, 3675 Julie Ct., Erie, Pa. 16506; Franklin T. Clark, Jr., 474 Hillcrest Dr., Girard, Pa. 16417; Stephen M. Oas, 3711 Winthrop, and John C. Ramsey, 4033 Sir Andrew Dr., both of Erie, Pa. 16506

Filed Jun. 19, 1998, Appl. No. 89,712
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1

410,825

STUD REMOVER

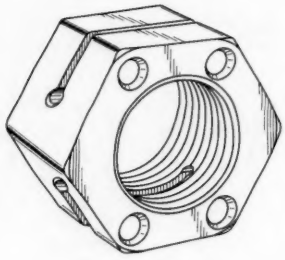
Steven E. Spirer, 391 Haworth Ave., Haworth, N.J. 07641

Filed Jul. 9, 1997, Appl. No. 73,471

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—14



410,826

WRENCH

Chih-Ching Hsieh, No. 64, Lane 107, Liang Tsun Rd., Fong Yuan City, Taichugn Hsien, Taiwan

Filed Oct. 21, 1998, Appl. No. 95,322

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—28

410,827

CAN OPENER

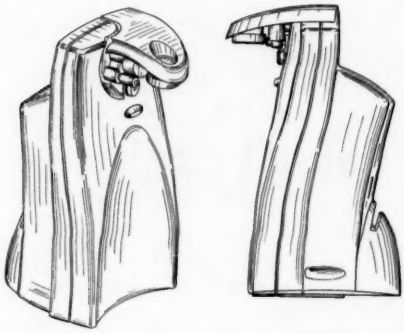
Ann Marie Conrado; Bart Massee, both of Chicago, and Robert Gelick, Evanston, all of Ill., assignors to The Rival Company, Kansas City, Mo.

Filed Jan. 9, 1998, Appl. No. 81,754

Term of patent 14 years

LOC (6) Cl. 07 - *99*

U.S. Cl. D8—35



410,828

FOLDED TOOL WITH CARRYING CLIP

Benjamin C. Rivera, West Linn, Oreg., assignor to Leatherman Tool Group, Inc., Portland, Oreg.

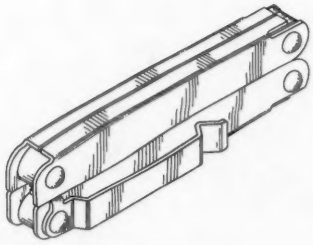
Filed Nov. 26, 1997, Appl. No. 80,043

This patent is subject to a terminal disclaimer

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—55



410,829

ROTARY DRIVING TOOL

Ping Hay Heun, Aberdeen, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Choon Nang Electrical Appliance Mfty., Ltd., Aberdeen, The Hong Kong Special Administrative Region of the People's Republic of China

Filed Jul. 24, 1998, Appl. No. 91,232

Claims priority, application United Kingdom, Jan. 26, 1998, 2071949

Term of patent 14 years

LOC (6) Cl. 08 - *09*

U.S. Cl. D8—61

410,830

IMPACT WRENCH

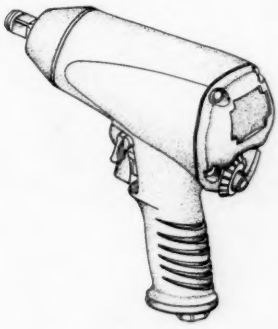
Daniel J. Pusateri, Grayslake, Ill.; James R. Brehm, and Joshua M. Beer, both of Racine, Wis., assignors to Snap-on Tools Company, Kenosha, Wis.

Filed Jul. 31, 1998, Appl. No. 91,532

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—68



410,831

TOOL HANDLE

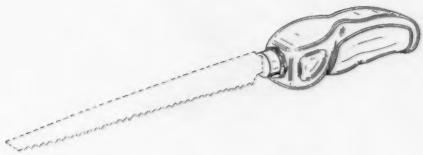
Richard A. Dossett, Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.

Filed Jun. 16, 1998, Appl. No. 89,507

Term of patent 14 years

LOC (6) Cl. 08 - *03*

U.S. Cl. D8—97



410,832

CUTTER

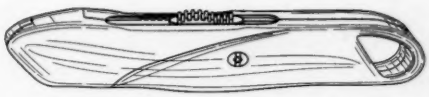
Sing-Yuen Chong, Chaiwan, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Twin Base Limited, Hong Kong, The Hong Kong Special Administrative Region of the People's Republic of China

Filed Feb. 27, 1998, Appl. No. 84,247

Term of patent 14 years

LOC (6) Cl. 08 - *03*

U.S. Cl. D8—99



410,833

MULTI-TOOL

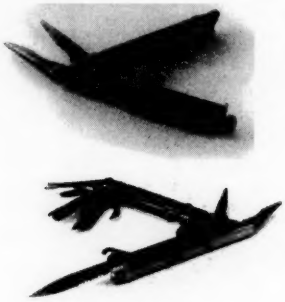
Katsumi Hasegawa, 3-9-5 Iwamoto-cho, Chiyoda-ku, Tokyo 101, Japan

Filed Jun. 30, 1997, Appl. No. 73,093

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—105



410,834

BICYCLE HANDLE BAR GRIP

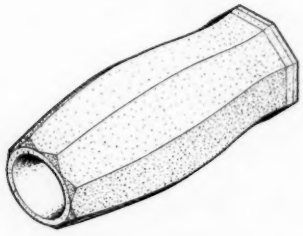
Yi-Hsung Hsu, No. 9, Lane 130, Sec. 1, Kuang Fu Rd., Sanchung City, Taipei Hsien, Taiwan

Filed Apr. 1, 1998, Appl. No. 85,976

Term of patent 14 years

LOC (6) Cl. 08 - *06*

U.S. Cl. D8—303



410,835

SET OF GATE BRACKETS

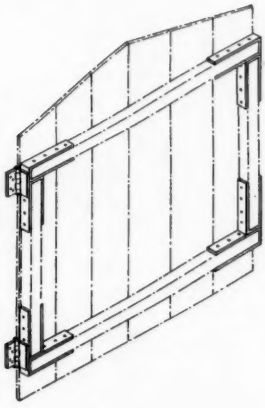
Barry Cosgrove, 1911 Will Scarlett Drive, Mississauga, Ontario, Canada, L5K 1J6

Filed Apr. 21, 1997, Appl. No. 70,003

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—354



410,836

TV SUPPORT

Henricus Hyacintus Vogels, Eindhoven, Netherlands, assignor to Vogel's Holding B.V., Eindhoven, Netherlands

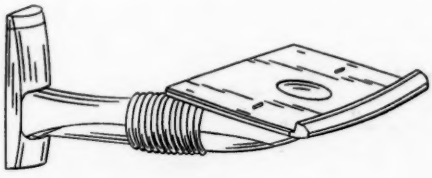
Division of application No. 29/088,333, May 20, 1998. This application Oct. 22, 1998, Appl. No. 95,389.

Claims priority, application Hague Agreement, Dec. 17, 1997, DMA/003957

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—363



410,837

TV SUPPORT

Henricus Hyacintus Vogels, Eindhoven, Netherlands, assignor to Vogel's Holding B.V., Eindhoven, Netherlands

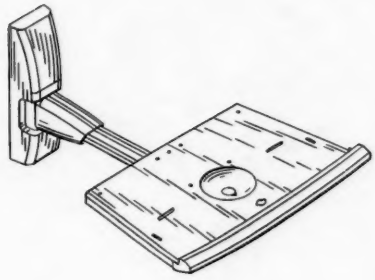
Division of application No. 29/088,317, May 20, 1998. This application Oct. 22, 1998, Appl. No. 95,393.

Claims priority, application WIPO, Dec. 10, 1997, DMA/003947

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—363



410,838

FLEXIBLE BEVERAGE CONTAINER

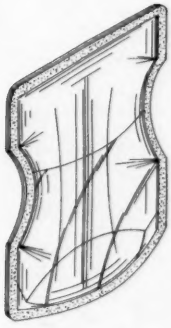
Ronald H. Berman, Long Beach, Calif., assignor to Saddlesprings Beverage Co., Inc., Torrance, Calif.

Filed Jun. 15, 1998, Appl. No. 89,417

Term of patent 14 years

LOC (6) Cl. 09 - *03*

U.S. Cl. D9—305



410,839

CONTAINER FOR NAIL ENAMEL OR THE LIKE

Megumi Nakano, Tokyo, Japan, assignor to Albion Cosmetics Co., Ltd., Tokyo, Japan

Filed Aug. 10, 1998, Appl. No. 91,979

Claims priority, application Japan, Feb. 26, 1998, 10-4927

Term of patent 14 years

LOC (6) Cl. 09 - *05*

U.S. Cl. D9—336

410,840

FOOD PACKAGE

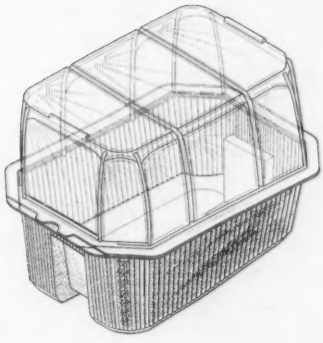
Ihor Wyslotsky, and Oleg Tsoi, both of Chicago, Ill., assignors to Redex Packaging Corp., Schaumburg, Ill.

Filed May 23, 1997, Appl. No. 71,235

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—418



410,841

PACKAGING SYSTEM

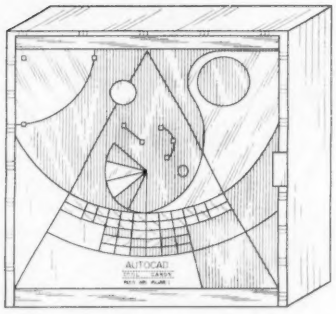
Sandra Roa Guzman, Cesar Nicolas Penson 80, 2do Piso, Santa Domingo, Dominican Rep.

Filed Feb. 6, 1998, Appl. No. 83,255

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—418



410,842

BOTTLE PROTECTING CONTAINER

Robert W. DiMarzo, Paulo, Brazil; Bradley R. Gramm, Lititz, Pa., and Rodney L. Laible, Bennington, Nebr., assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 26, 1996, Appl. No. 57,512

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—435

410,843

FLIP-CAP CLOSURE

Jens Mogard, Buffalo Grove, Ill., assignor to Tetra Laval Holdings & Finance, SA, Pully, Switzerland

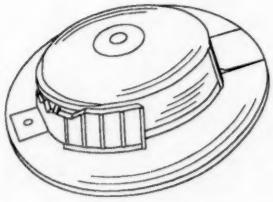
Filed Apr. 9, 1998, Appl. No. 86,305

This patent is subject to a terminal disclaimer

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—438



410,844

CAN END PORTION

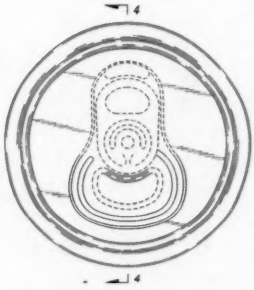
Robert L. Hurst, Golden, Colo., assignor to Coors Brewing Company, Golden, Colo.

Division of application No. 29/070,769, May 15, 1997, Pat. No. Des. 402,887, which is a continuation of application No. 29/062,721, Nov. 22, 1996, abandoned. This application Jun. 11, 1998, Appl. No. 93,585.

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—438

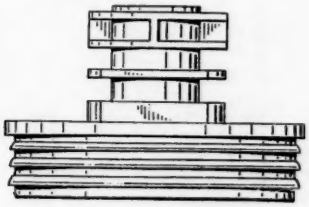


410,845

CONTAINER NECK

Mark L. Anderson, 303 South MacKay Ave., Spring Valley, Wis. 54767

Filed Aug. 25, 1997, Appl. No. 75,786
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—440

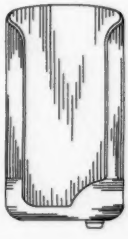


410,846

HOLDER FOR DISPENSING FLOWABLE MATERIALS FROM A POUCH

Randy Leong, 705 Oceanhill Dr., and Sean Thomas, 816 Alabama St., both of Huntington Beach, Calif. 92648

Filed Jun. 13, 1997, Appl. No. 72,342
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—455

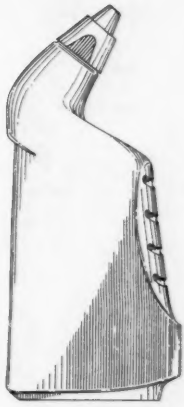


410,847

COMBINED BOTTLE AND CAP

Alan N. Bodker, Wayne, N.J.; Jean Michel Farce, and Karim El Ghouyel, both of Paris, France, assignors to Reckitt & Colman Inc., Wayne, N.J.

Filed Mar. 27, 1998, Appl. No. 85,694
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—526

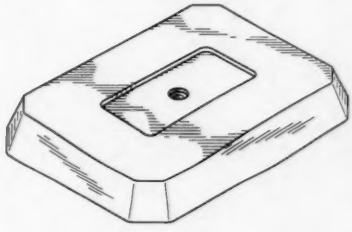


410,848

PET GRAVE MARKER

J. Lewis Daniels, 135 Sondley Pkwy., Asheville, N.C. 28805

Filed Jul. 15, 1998, Appl. No. 90,739
Term of patent 14 years
LOC (6) Cl. 19 - *00*
U.S. Cl. D99—17

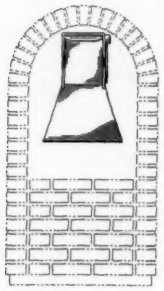


410,849

MAILBOX

James W. Grimes, 1349 Barclay, Carrollton, Tex. 75007

Filed Aug. 4, 1998, Appl. No. 91,703
Term of patent 14 years
LOC (6) Cl. 99 - *00*
U.S. Cl. D99—29

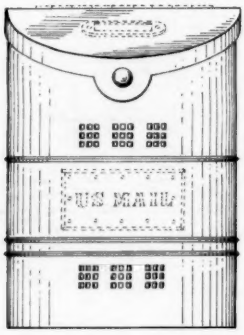


410,850

MAILBOX

Julio Lio, Brooklyn, N.Y., assignor to Fuoriserie Imports, Inc., Brooklyn, N.Y.

Filed Jun. 11, 1998, Appl. No. 89,286
Term of patent 14 years
LOC (6) Cl. 99 - *00*
U.S. Cl. D99—33



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NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Ihara, Toshiyuki, 5,910,657, Cl. 250-310.000.

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Hase, Yoshihiko; Morotomi, Hidetoshi; Okamoto, Hiromi; Komura, Syoji; Takigawa, Yasuyuki; Hirano, Shigeyuki; and Shiode, Tetsuo, 5,910,383, Cl. 429-231.400.

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Arai, Soichiro; Miyazawa, Kenichi; Yabara, Hidefumi; Yasuda, Hiroshi; and Nakatani, Takayuki, 5,910,658, Cl. 250-492.220.

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Aguilar, Marie Isabel: *See*—
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Ahrens, Carl Austin: *See*—
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Ono, Satoru; Aizawa, Ryuji; and Asako, Yoshinobu, 5,910,269, Cl. 252-73.000.

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Akiyama, Masahiro: *See*—
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Jones, Paul D.; Malpass, Dennis B.; and Smith, Gregory M., 5,910,270, Cl. 252-182.300.

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Staples, Lawrence L.; and O'Neil, Timothy, 5,910,088, Cl. 52-741.400.

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Resconi, Luigi; Galimberti, Maurizio; Piemontesi, Fabrizio; Guglielmi, Floriano; and Albizzati, Enrico, 5,910,464, Cl. 502-111.000.

Alcatel Alsthom Compagnie Generale d'Electricite: *See*—
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Torregrossa, Philippe, 5,910,977, Cl. 379-29.000.

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Bigo, Sébastien, 5,911,015, Cl. 385-1.000.

Alcatel USA Sourcing, L.P.: *See*—
Polczynski, Christopher, 5,910,731, Cl. 326-30.000.

Alcon Laboratories, Inc.: *See*—
Ali, Yusuf; Bhatia, Rajkumar; and Kulshreshtha, Alok K., 5,909,745, Cl. 134-42.000.

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Wong, Patrick S.-L.; Roth, Nathan; and Ferrari, Vincent J., 5,910,321, Cl. 424-473.000.

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Tam, Kimo Y. F., 5,910,780, Cl. 340-825.790.

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Ichimoto, Kazuhiro; Nakayama, Osamu; Kishimoto, Mitsuru; Iida, Kazumasa; Tamura, Hiroki; Miyamoto, Katsuhiko; and Ando, Hiromitsu, 5,909,723, Cl. 123-406.000.

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Aoki, Keisuke; Yamagata, Kazuto; Ando, Keigo; Kamada, Masashi; Kinoshita, Kanjiro; and Kimura, Kansuke, 5,910,045, Cl. 454-186.000.

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Anthony, William Stanley, to United States of America, Agriculture. Apparatus and method for reducing fiber waste by lint cleaners. 5,909,786, Cl. 19-41.000.

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Adachi, Chihaya; Sasaki, Masaomi; Nagai, Kazukiyo; Shimada, Tomoyuki; Tanaka, Chiaki; Tamoto, Nozomu; Katayama, Akira; Anzai, Mitsutoshi; Imai, Akihiro; and Morooka, Katsuhiro, 5,910,561, Cl. 528-196.000.

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Aoyagi, Yoshihiro: See—
Ozawa, Osamu; Kawazura, Tetsuji; Kuroda, Noriaki; Aoyagi, Yoshihiro; Watanabe, Jiro; and Kawaguchi, Gou, 5,910,544, Cl. 525-178.000.

Apple Computer, Inc.: See—
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Farrar, Douglas M., 5,910,991, Cl. 381-59.000.
Owens, David H.; and Fisher, Stephen, 5,911,067, Cl. 395-680.000.
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Blum, Rick; Fairbairn, Kevin; and Lane, Christopher, 5,909,994, Cl. 414-217.000.
Cruse, James P., 5,910,011, Cl. 438-16.000.
Donde, Arik, 5,910,338, Cl. 427-290.000.
Wu, Robert W., 5,910,221, Cl. 118-723.00R.
Yao, Gongda; Ding, Peijun; Xu, Zheng; and Kieu, Hoa, 5,911,113, Cl. 438-649.000.

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Profit, Jack H., Jr., 5,911,059, Cl. 395-500.000.

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Farr, Stephan J.; Rowe, Antony M.; and Rubsamen, Reid, 5,910,301, Cl. 424-45.000.

Arai, Soichiro; Miyazawa, Kenichi; Yabara, Hidefumi; Yasuda, Hiroshi; and Nakatani, Takayuki, to Fujitsu Limited; and Advantest Corporation. Method and system for changed particle beam exposure. 5,910,658, Cl. 250-492.220.

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Arakawa, Kazuhiko: *See—*
Yanai, Yuichi; Hirai, Takayuki; Oba, Masayoshi; Ikeda, Kiyoshi; Takagi, Yasushi; Ishikawa, Takeo; Harada, Kazuhiko; Iida, Hirotaka; Arakawa, Kazuhiko; Ii, Masazumi; and Nakamura, Yuzo, 5,910,279, Cl. 264-282.000.

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Kondo, Toshiro; Araki, Yutaka; Fujioka, Hajime; and Oko, Makiko, 5,910,391, Cl. 430-204.000.

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Harris, Harold Robert; Aral, Halil; Bruckard, Warren John; Freeman, David Edward; Houchin, Martin Richard; McDonald, Kenneth Joun; Sparrow, Graham Jeffrey; and Grey, Ian Edward, 5,910,621, Cl. 75-399.000.

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ARCH Development Corporation: *See—*
Haselkorn, Robert; and Gornicki, Piotr, 5,910,626, Cl. 800-205.000.

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Chu, Wayne K.; and Ruckel, Erwin R., 5,910,526, Cl. 524-270.000.

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Kelley, Edward Emile; and Armbrust, Daniel J., 5,911,141, Cl. 707-10.000.

Arnell, Leon: *See—*
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Gasca, Jean-Philippe; Arpin, Michel; Malgrange, Denis; and Caurant, Daniel, *5,910,461, Cl. 501-35.000.*

Arrow Sign Company: *See—*
Manion, Michael P.; and Brown, Donald M., 5,909,991, Cl. 411-377.000.

Asahi Intecc Co., Ltd.: *See—*
Miyata, Naohiko; Momota, Masashi; and Saruta, Minoru, 5,910,364, Cl. *428-375.000.*

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Ogawa, Yuji, 5,911,089, Cl. 396-435.000.
Ozaki, Hiroyasu; and Ito, Takayuki, 5,910,860, Cl. 359-691.000.
Yamamoto, Akira, 5,910,584, Cl. 536-25.400.

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Asako, Yoshinobu: *See—*
Ono, Satoru; Aizawa, Ryuji; and Asako, Yoshinobu, 5,910,269, Cl. 252-73.000.

Asano, Masaki: *See—*
Ueda, Takamasa; Natsuhara, Toshiya; Asano, Masaki; and Hotomi, Hideo, 5,910,211, Cl. 106-31.430.

Asculai, Samuel Simon: *See—*
Falk, Rudolf Edgar; and Asculai, Samuel Simon, 5,910,489, Cl. 514-54.000.

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Weimers, Lars, 5,910,888, Cl. 363-35.000.

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Hawbaker, Michael S., 5,910,636, Cl. 800-320.100.

Ashdown, Steven Hugh; McIntyre, Robert; and Richmond, Neil Martin, to Tioxide Group Services Limited. Treated titanium dioxide. 5,910,213, Cl. 106-436.000.

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Jourde, Bernard; Louis, François; and Jean, Robert, 5,909,883, Cl. 28-114.000.

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Bhagat, Promod Kumar; and Garoutte, Dana Lee, 5,910,981, Cl. 379-219.000.
Goel, Anurag; Kancianic, Eugene M.; and Peinado, Fermin D., 5,910,979, Cl. 379-120.000.

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Jarett, Keith; Williams, Roland E.; Raffel, Michael A.; Nelson, Roderick; Leuca, Ileana A.; Lee, Tony S.; Lawrence, Christopher G.; Kibria, Masud; Glass, David R.; and Bamburak, Michael D., 5,911,120, Cl. 455-417.000.

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Atkinson, Leon Eric; Taylor, Joseph Stanley; and Miller, Paul Hier, to Technimark, Inc. Apparatus for covering a textile dye tube. 5,910,228, Cl. 156-450.000.

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Jarett, Keith; Williams, Roland E.; Raffel, Michael A.; Nelson, Roderick; Leuca, Ileana A.; Lee, Tony S.; Lawrence, Christopher G.; Kibria, Masud; Glass, David R.; and Bamburak, Michael D., 5,911,120, Cl. 455-417.000.

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Strasser, Thomas Edward; and Atmur, Steven Donald, 5,910,095, Cl. 60-272.000.

Ato Findley, Inc.: *See—*
Alper, Mark D.; and Strelow, Diane, 5,910,527, Cl. 524-274.000.

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Turri, Stefano; Tonelli, Claudio; and Pogliani, Carlo, 5,910,614, Cl. 568-615.000.
Wlassics, Ivan; and Navarrini, Walter, 5,910,587, Cl. 544-216.000.

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Stamos, Theodore C.; Galbraith, Stephen L.; and Honzelka, Thomas P., 5,910,244, Cl. 210-138.000.

AWL Golf: *See—*
Scalise, Patrick A., 5,910,053, Cl. 473-257.000.

B & W Corporation: *See—*
Mansfield, Michael T.; and Wood, Ronald L., Jr., 5,909,863, Cl. 248-235.000.

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Schultz, Willard F., 5,910,132, Cl. 604-162.000.
Sperko, William A.; Turner, Robert E.; Smith, Steven L.; and Ray, William B., 5,910,138, Cl. 604-408.000.

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Jones, Darryl W., 5,910,266, Cl. 219-528.000.

Bach, Erik; Mikkelsen, Kaj Svejstrup; Michaelsen, Carsten Peter; and Kushner, Philip Marshall, to INTERLEGO AG. Toy building system. 5,910,037, Cl. 446-108.000.

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Tolhuizen, Ludovicus M.G.M.; and Baggen, Constant P.M.J., 5,910,961, Cl. 371-39.100.

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Duffy, Robert A.; and Griffin, Lyle N., 5,911,043, Cl. 395-200.330.

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Davis, John P., 5,909,770, Cl. 166-117.600.

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Samsom, Sebastianus M.; Thijssen, Aloysius P.; and Baker, Keith, 5,911,064, Cl. 395-556.000.

Baker, Richard Eugene: *See—*
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Wolf, Hans; Hinterschuster, Reiner; and Kemmerer, Guenter, 5,909,995, Cl. 414-217.000.

Bamburak, Michael D.: *See—*
Jarett, Keith; Williams, Roland E.; Raffel, Michael A.; Nelson, Roderick; Leuca, Ileana A.; Lee, Tony S.; Lawrence, Christopher G.; Kibria, Masud; Glass, David R.; and Bamburak, Michael D., 5,911,120, Cl. 455-417.000.

Banks, Donald R.: *See—*
Meola, Carmine G.; Johnson, Daniel D.; Banks, Donald R.; and Ameen, Joseph G., 5,910,354, Cl. 428-198.000.

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Kempe, Maria; and Barany, George, 5,910,554, Cl. 526-320.000.

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Hammerstedt, Roy H.; Cramer, Palmer G.; and Barbato, Guy F., 5,910,568, Cl. 530-324.000.

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Bronstein, Zvi; Mann, Eytan; and Bar-Eli, Eldad, 5,910,954, Cl. 370-401.000.

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Claydon, Anthony Peter J.; MacFarlane, Charles D.; Gammack, Richard J.; Jones, Anthony Mark; Robbins, William P.; and Barnes, Mark, 5,910,960, Cl. 371-37.110.

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Holdsworth, Steven E., 5,909,980, Cl. 403-362.000.

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Aichinger, Heinrich; Geisendörfer, Matthias; Herbst, Holger; and Nestler, Gerhard, 5,910,603, Cl. 560-205.000.
Güntherberg, Norbert; Hofmann, Jürgen; Ohlig, Hilmar; Mailahn, Elmar; Bus, Klaus; Czauderna, Bernhard; and Grabowski, Sven, 5,910,276, Cl. 264-101.000.
Kessel, Knut; Patsch, Manfred; Herrmann, Manfred; Reiner, Kurt; Jessen, Jörg; and Wiesenfeldt, Matthias, 5,910,623, Cl. 8-402.000.
McKee, Graham Edmund; Moors, Rainer; Gausepohl, Hermann; and Seibring, Joachim, 5,910,553, Cl. 526-319.000.
Rath, Hans Peter, 5,910,550, Cl. 526-237.000.
Saling, Peter; Klahr, Erhard; Reichelt, Helmut; and Gruettner-Merten, Sabine, 5,910,578, Cl. 534-850.000.
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Simon, Joachim; Henne, Andreas; and Lingk, Heinz, 5,910,612, Cl. 564-497.000.
Tenten, Andreas; Weidlich, Peter; and Linden, Gerd, 5,910,608, Cl. 562-532.000.

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Baxter, Brent S.: *See—*
Carson, David G.; Hayek, George R.; Baxter, Brent S.; Case, Colyn; Meinerth, Kim A.; and Langendorf, Brian K., 5,911,051, Cl. 395-287.000.

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Heinen, Ernst; Schmeer, Norbert; and Herbst, Werner, 5,910,310, Cl. 424-211.100.
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Wamprecht, Christian; Wilmes, Oswald; Kirchmeyer, Stephan; and Mazanek, Jan, 5,910,556, Cl. 528-49.000.

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Guo, John W.; and Nayar, Rajiv, 5,911,165, Cl. 73-827.000.
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Ponomarev-Stepnoy, Nikolai N.; Pavshook, Vladimir A.; Bebikh, Grigoriy F.; Khvostionov, Vladimir Ye.; Trukhlyaev, Peter S.; and Shvetsov, Ivan K., 5,910,971, Cl. 376-189.000.

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Caizza, Richard J.; and Walters, Bronwen, 5,910,130, Cl. 604-110.000.

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Carluccio, Luciano; Millini, Roberto; and Bellussi, Giuseppe, 5,910,299, Cl. 423-706.000.

Belter, Randolph K.: *See—*
Boyce, C. Bradford; and Belter, Randolph K., 5,910,616, Cl. 570-167.000.

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Dultz, Wolfgang; Onokhov, Arkadii; Beresnev, Leonid; and Haase, Wolfgang, 5,910,828, Cl. 349-25.000.

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Bernard, Franck; and Florent, Raoul, to U.S. Philips Corporation. Method for the temporal filtering of the noise in an image of a sequence of digital images, and device for carrying out the method. 5,911,012, Cl. 382-260.000.

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Bertina, Rogier Maria; and Reitsma, Pieter Hendrik, to Rijks Universiteit Leiden. Method for screening for the presence of a genetic defect associated with thrombosis and/or poor anticoagulant response to activated protein. 5,910,576, Cl. 530-388.250.

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Best, Theodore O. Spring motor. 5,909,784, Cl. 185-10.000.

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Carey, William S.; Peltier, Jeffrey H.; and Goliaszewski, Alan E., 5,910,469, Cl. 508-422.000.
Ouyang, Jiangbo; Deck, Philip D.; and Harpel, William L., 5,909,742, Cl. 134-3.000.

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Bhattacharjee, Jnanendra K.; and Bhattacherjee, Vasker, 5,910,409, Cl. 435-6.000.

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Hausheer, Frederick H.; Petluru, Pavankumar N.V.; Reddy, Dasharatha; Murali, Dhanabalan; Haridas, Kochat; Seetharamulu, Peddaiahgari; and Yao, Shijie, 5,910,491, Cl. 514-63.000.

Bird, Colin Roger; Burridge, Brett Eric; Tucker, Gregory Alan; and Zhang, Jianliang, to Zeneca Limited. DNA encoding a pectin esterase, cells and plants derived therefrom. 5,910,632, Cl. 800-298.000.

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Henry, George F.; and Birrell, James S., 5,910,070, Cl. 482-4.000.

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Black, Donald, to ID Technologies, Inc. Method and apparatus for identifying locating or monitoring equipment or other objects. 5,910,776, Cl. 340-825.350.

Black, Robert H. Method of rinsing showers clean. 5,910,474, Cl. 510-238.000.

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Blum, Rick; Fairbairn, Kevin; and Lane, Christopher, to Applied Materials, Inc. Vertical dual loadlock chamber. 5,909,994, Cl. 414-217.000.

Blume, David B. Transmission. 5,910,060, Cl. 475-28.000.

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Ullrich, Stephen E., 5,910,309, Cl. 424-198.100.
Yallampalli, Chandrasekhar; and Wimalawansa, Sunil J., 5,910,482, Cl. 514-12.000.

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Goodenough, John B.; Padhi, Akshaya K.; Nanjundaswamy, K. S.; and Masquelier, Christian, 5,910,382, Cl. 429-218.100.

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Ertz, Alexander L., III; Mascari, Thomas A., Jr.; and Rodriguez, Reginald J., 5,910,689, Cl. 307-64.000.

Boegner, Walter; Haak, Karl-Ernst; Krutzsch, Bernd; Verrelst, Wim; Voigtlaender, Dirk; Wenninger, Guenter; and Wirbeleit, Friedrich, to Daimler-Benz Aktiengesellschaft. Internal combustion engine exhaust emission control system with adsorbers for nitrogen oxides. 5,910,097, Cl. 60-278.000.

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Kraft, Kurt R.; Vieth, Gary L.; and Louden, Peter J., 5,910,094, Cl. 60-39.091.

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Bogdan, Wladyslaw, to Northern Telecom Limited. Direct digital phase synthesis. 5,910,753, Cl. 331-17.000.

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Bones Consulting, LLC: *See*—
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Short, Michael L.; Bornhorst, John B.; Daniel, Eward A.; and Homan, Dale A., 5,909,705, Cl. 100-214.000.

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Perry, Terry T.; Bose, Krishnangshu; LaFlamme, David W; and Magyar, Lester J, 5,910,219, Cl. 118-719.000.

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Boursier, Alain; and Giron, Louis, to U.S. Philips Corporation. Telephone set. 5,910,815, Cl. 348-14.000.

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Bragg, James R., to Exxon Production Research Company. Solids-stabilized emulsion. 5,910,467, Cl. 507-202.000.

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Chouly, Antoine; Brajal, Américo; and Casals Castané, Josep, 5,910,968, Cl. 375-279.000.

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Brenner, Kurt; Seitz, Karl; Ahnelt, Peter; Roth, Roland; and Dominicus, Walter, to Carl-Zeiss-Stiftung. Collision protective arrangement for the measuring arm of a coordinate measuring apparatus. 5,909,938, Cl. 33-503.000.

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Wang, Xiaorong; Clark, Frank J.; Takeichi, Hideo; Matsuse, Takahiro; Mashita, Naruhiko; and Toyosawa, Shinichi, 5,910,530, Cl. 524-534.000.

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Brigham, Lawrence N.: *See—*
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Brightwell, Malcolm David: *See—*
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Brinkman, Michael J.: *See—*
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Brodmann, George L., to DCV, Inc. Method for treating fibrous cellulosic materials. 5,910,622, Cl. 8-182.000.

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Broghammer, William J.; Niccolls, Richard W.; and Ophaug, Darrell P., to Square D Company. Phase barrier for use in a multiphase circuit breaker. 5,910,757, Cl. 335-9.000.

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Singhal, Ashok; Liencres, Bjorn; Price, Jeff; Cerauskis, Frederick M.; Broniarczyk, David; Cheung, Gerald; Hagersten, Erik; and Agarwal, Nalini, 5,911,052, Cl. 395-293.000.

Bronnenberg, Nicky Marion: *See—*
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Brooks, Jeffrey B.; Spehrley, Charles W., Jr.; Barss, Steven H.; Moynihan, Edward R.; Hine, Nathan P.; and Gailus, David W., to Markem Corporation. Ink jet printing system. 5,910,810, Cl. 347-88.000.

Brotzki, Bernard J.: *See—*
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Brown, Donald M.: *See—*
Manion, Michael P.; and Brown, Donald M., 5,909,991, Cl. 411-377.000.

Brown, Geoffrey John: *See—*
Swain, Paul; Kapec, Jeffrey; Tanaka, Kazuna; Gong, Feng; Brown, Geoffrey John; Ouellette, Gerry; and Tennant, William M., Jr., 5,910,105, Cl. 600-131.000.

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Arora, Samir; Arora, Gagan; Lakshminarayan, Rajagopal; Brown, Gregory; Fried-Nielsen, Martin; Mok, Clement; and Kleinberg, David, 5,911,145, Cl. 707-514.000.

Brown, J. Breck, to Pyykkonen, Steven R. Game machine wager sensor. 5,909,876, Cl. 273-309.000.

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Duhon, Peter A.; and Brown, Kennedy J., 5,909,769, Cl. 166-115.000.

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Brown, Thomas Mattingly. Peripheral viewing optical scanner for three dimensional surface measurement. 5,910,845, Cl. 356-376.000.

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Johnson, Ted Donald; Brown, W. Craig; and Kelly, Raymond C., 5,910,419, Cl. 435-7.920.

Brownlee, David W. Oxygen supply system for wheeled vehicles. 5,910,773, Cl. 340-576.000.

Broyles, Stephen G. Motorcycle turn signal lens cover. 5,909,956, Cl. 362-473.000.

Bruckard, Warren John: *See—*
Harris, Harold Robert; Aral, Halil; Bruckard, Warren John; Freeman, David Edward; Houchin, Martin Richard; McDonald, Kenneth Joun; Sparrow, Graham Jeffrey; and Grey, Ian Edward, 5,910,621, Cl. 75-399.000.

Bruke, Richard L., to Spirac Engineering AB. Displacement device. 5,910,243, Cl. 210-104.000.

Bruker Daltonik GmbH: *See—*
Köster, Claus; Holle, Armin; and Franzen, Jochen, 5,910,656, Cl. 250-287.000.

Bruker SA: *See—*
Weiss, Michel; Martinache, Laurent; and Gonella, Olivier, 5,909,963, Cl. 374-175.000.

Brumfield, David L.: *See—*
Morrison, Matthew M.; Loveless, Eric A.; Brumfield, David L.; Barker, B. Thomas; Carroll, Catalina J.; Miller, David; and Petit, Dominique, 5,910,141, Cl. 606-61.000.

Brun, Zdenek: *See—*
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Brunswick Corporation: *See—*
Gruenwald, David J.; and Gruenwald, James D., 5,910,032, Cl. 440-38.000.
Ziemer, Lance W.; and Kujawski, Kenneth W., 5,910,195, Cl. 74-603.000.

Bryla, James J.: *See—*
Dezonno, Anthony J.; Sumner, Roger A.; and Bryla, James J., 5,910,983, Cl. 379-266.000.

BTG International Limited: *See—*
Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,910,346, Cl. 428-36.900.

Buberl, Ernst: *See—*
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Buchert, Hermann: *See—*
Schoenherr, Michael; Ahlers, Juergen; and Buchert, Hermann, 5,910,558, Cl. 528-125.000.

Budde, Peter: *See—*
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Bueb, Patrick A.: *See*—
Jahr, Steven J.; and Bueb, Patrick A., 5,911,054, Cl. 395-307.000.
Bühler, Karl-Ulrich: *See*—
Wanken, Klaus-Wilfried; and Bühler, Karl-Ulrich, 5,910,624, Cl. 8-533.000.
Bull S.A.: *See*—
Leprince, Elisabeth; Carosso, Robert; Kiso, James; and Strassberger, Edward, 5,911,074, Cl. 395-703.000.
Bullock, Scott R.: *See*—
Bartholomew, David B.; Bullock, Scott R.; and Knab, John M., 5,911,119, Cl. 455-402.000.
Bulst, Wolf-Eckhart; Ruppel, Clemens; Reindl, Leonhard; and Seifert, Franz, to Siemens Aktiengesellschaft. Radio scanning system using acoustical surface waves (SW radio scanning system). 5,910,779, Cl. 340-825.540.
Bunya, Jun: *See*—
Nishi, Kenichiro; Nagai, Satoshi; Eguchi, Kentaro; Arai, Takeshi; Bunya, Jun; Shimizu, Kazutaka; Shibata, Koji; and Ogawa, Isamu, 5,910,713, Cl. 315-308.000.
Burgess, Lester E. Pressure activated switching device. 5,910,355, Cl. 428-209.000.
Burgett, Inc.: *See*—
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Burgin, Henry Earl: *See*—
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Burrell, Gary L., to Garmin Corporation. Portable electronic device for use in combination portable and fixed mount applications. 5,910,882, Cl. 361-681.000.
Burridge, Brett Eric: *See*—
Bird, Colin Roger; Burridge, Brett Eric; Tucker, Gregory Alan; and Zhang, Jianliang, 5,910,632, Cl. 800-298.000.
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Güntherberg, Norbert; Hofmann, Jürgen; Ohlig, Hilmar; Mailahn, Elmar; Bus, Klaus; Czauderna, Bernhard; and Grabowski, Sven, 5,910,276, Cl. 264-101.000.
Busato, Murray F.: *See*—
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Buschke Kamienski, Diane, executrix: *See*—
Schwindeman, James Anthony; Quirk, Roderic Paul; Kamienski, Conrad William, deceased, 5,910,547, Cl. 525-332.800.
Busick, Rickey L.; and Steinmetz, Mark F., to Vickers, Incorporated. Method and apparatus for fast threading pullout in a numerically controlled threading application. 5,910,199, Cl. 82-1.110.
Butler, Alen Paul: *See*—
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Buzbee, William B.: *See*—
Mattson, James S., Jr.; Shah, Lacky V.; and Buzbee, William B., 5,911,073, Cl. 395-701.000.
Byrd, Norman R.: *See*—
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C.K. Chen: *See*—
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C. R. Bard, Inc.: *See*—
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Swain, Paul; Kapec, Jeffrey; Tanaka, Kazuna; Gong, Feng; Brown, Geoffrey John; Ouellette, Gerry; and Tennant, William M., Jr., 5,910,105, Cl. 600-131.000.
C. Uyemura & Co., Ltd.: *See*—
Uchida, Hiroki; Kiso, Masayuki; Nakamura, Takayuki; Kamitamari, Tohru; Susuki, Rumiko; and Shimizu, Koichiro, 5,910,340, Cl. 427-437.000.
Cable, Thomas L.; Petrik, Michael A.; and Lee, Benson P., to Technology Management, Inc. Microspheres for combined oxygen separation, storage and delivery. 5,910,238, Cl. 205-634.000.
Cabletron Systems, Inc.: *See*—
Dorsey, Paul C.; Frazier, Kevin M.; Breig, David J.; and Duymazlar, Mehmet H., 5,910,690, Cl. 307-141.000.
Cafe 98 Industries Limited: *See*—
Patel, Dahyabhai U., 5,910,205, Cl. 99-315.000.
Caizza, Richard J.; and Walters, Bronwen, to Becton, Dickinson and Company. Shield and actuator for needles. 5,910,130, Cl. 604-110.000.
Cakmakci, Sakin R.; and Lobodinsky, Walter A., to York International Corporation. Enhanced refrigerant recovery system. 5,910,160, Cl. 62-195.000.
Callicotte, Mark J.; and Storm, Brian D., to Motorola, Inc. Radio telephone and method for operating a radiotelephone in slotted paging mode. 5,910,944, Cl. 370-311.000.
Calsonic Corporation: *See*—
Noda, Yoshitoshi, 5,910,157, Cl. 62-133.000.
Takahashi, Yoichi; and Suyama, Eizo, 5,909,903, Cl. 285-330.000.
Calvert Holdings LLC: *See*—
Winzen, Debra, 5,909,979, Cl. 402-79.000.
Camel Furniture Co., Ltd.: *See*—
Wang, Chih Chiang, 5,909,864, Cl. 248-289.110.
Campion, Colin; Davidson, Alan Hornsby; Dickens, Jonathan Philip; and Crimmin, Michael John, to British Biotech Pharmaceuticals Limited. Compounds. 5,910,609, Cl. 562-621.000.
Campo, James A., to Telxon Corporation. Shelf tag with ambient light detector. 5,910,653, Cl. 250-214.0AL.
Candescent Technologies, Corp.: *See*—
Hansen, Ronald L.; and Spindt, Christopher J., 5,910,792, Cl. 345-74.000.
Cannon, Kevin: *See*—
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Canon Kabushiki Kaisha: *See*—
Batori, Yoshiyuki; and Sato, Minoru, 5,911,096, Cl. 399-111.000.
Fujii, Akio; Enari, Masahiko; and Satake, Yoshifumi, 5,911,033, Cl. 386-109.000.
Hasegawa, Takashi; Kimura, Yoichi; and Tamura, Satoshi, 5,911,100, Cl. 399-303.000.
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Higashihara, Masaki; and Yamashita, Kenitiro, 5,911,088, Cl. 396-387.000.
Hirooka, Masaaki; Ogawa, Kyosuke; Ishihara, Shunichi; and Shimizu, Isamu, 5,910,342, Cl. 427-573.000.
Miyake, Nobutaka, 5,911,007, Cl. 382-233.000.
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Ohsawa, Keishi, 5,911,093, Cl. 399-50.000.
Oishi, Satoru, 5,910,843, Cl. 356-375.000.
Ono, Takeshi, 5,910,848, Cl. 358-404.000.
Onodera, Ken; and Murata, Masahiko, 5,911,147, Cl. 711-5.000.
Sato, Osamu, 5,910,811, Cl. 347-104.000.
Takahashi, Koji, 5,909,872, Cl. 271-116.000.
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Taniishi, Shinnosuke, 5,911,013, Cl. 382-280.000.
Yamamoto, Tomoya; Haruta, Masahiro; Koike, Shoji; Shirota, Koromo; Takaide, Aya; and Suzuki, Mariko, 5,910,812, Cl. 347-106.000.
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Yoshinaga, Kazuo; Nishida, Shunichiro; Kawahara, Masataka; Hiraoka, Keiko; Kushibiki, Nobuo; Kobayashi, Hideki; Takeuchi, Kikuko; and Masatomi, Toru, 5,910,386, Cl. 430-66.000.
Capriotti, Roberto; and Rahman, Mizanur, to Itron, Inc. Sensor for count and tamper detection. 5,910,774, Cl. 340-637.000.
Cardiassist Incorporated: *See*—
Rubin, Leo, 5,910,124, Cl. 601-153.000.
Cardin, David A.: *See*—
Primos, Wilbur R.; and Cardin, David A., 5,910,039, Cl. 446-207.000.
Carefree/Scott Fetzer Company: *See*—
Murray, Brent W., 5,909,761, Cl. 160-71.000.
Carey, Brian Robert: *See*—
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Carey, Matthew C.: *See*—
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Carey, William S.; Peltier, Jeffrey H.; and Goliaszewski, Alan E., to BetzDearborn Inc. Crude oil composition comprising an alkylphosphonate antifouling additive. 5,910,469, Cl. 508-422.000.
Carl Zeiss Jena GmbH: *See*—
Simon, Ulrich, 5,910,963, Cl. 372-98.000.
Carl-Zeiss-Stiftung: *See*—
Brenner, Kurt; Seitz, Karl; Ahnelt, Peter; Roth, Roland; and Dominicus, Walter, 5,909,938, Cl. 33-503.000.
Carlson, Carl Christian: *See*—
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Carlson, Johanna: *See*—
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Carluccio, Luciano; Millini, Roberto; and Bellussi, Giuseppe, to Eniricerche S.p.A. ERS-10 zeolite and process for its preparation. 5,910,299, Cl. 423-706.000.
Carnegie-Mellon University: *See*—
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Caroll, James E.: *See*—
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Carosso, Robert: *See*—
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Carpenter, Mark Alan; Lection, David Bruce; and Molander, Mark Edward, to International Business Machines Corporation. Location motion sensitive user interface. 5,910,799, Cl. 345-333.000.
Carrara, Sergio. Method for the production of packing for stuffing boxes. 5,910,204, Cl. 87-31.000.
Carrier Corporation: *See*—
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Carroll, Catalina J.: *See*—
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Carroll, Keith C.: *See*—
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Carson, David G.; Hayek, George R.; Baxter, Brent S.; Case, Colyn; Meinerth, Kim A.; and Langendorf, Brian K., to Intel Corporation. High-throughput interconnect allowing bus transactions based on partial access requests. 5,911,051, Cl. 395-287.000.

Carter, Randy A. Control joint for forming concrete. 5,910,087, Cl. 52-371.000.
Casals Castané, Josep: *See*—
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Casco Products, Inc.: *See*—
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Case, Colyn: *See*—
Carson, David G.; Hayek, George R.; Baxter, Brent S.; Case, Colyn; Meinerth, Kim A.; and Langendorf, Brian K., 5,911,051, Cl. 395-287.000.
Case Corporation: *See*—
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Cassin, Peter J.; Harootunian, Alec Tate; Pham, Andrew A.; and Tsien, Roger Y., to Aurora Biosciences Corporation. Low background multi-well plates with greater than 864 wells for fluorescence measurements of biological and biochemical samples. 5,910,287, Cl. 422-102.000.
Castellani, Luca, to Pirelli Cavi S.P.A. Self-extinguishing cable releasing low quantities of toxic and corrosive smokes and gases. 5,910,365, Cl. 428-379.000.
Castille, Dale J.; Webre, Michael; and Mosing, Donald, to Frank's Casing Crews and Rental Tools, Inc. Apparatus and method for improved tubular grip assurance. 5,909,768, Cl. 166-77.100.
Castonguay, Roger N.; and Smith, James I., to General Electric Company. Manual charging mechanism for industrial-rated circuit breaker. 5,910,650, Cl. 200-400.000.
Castonguay, Ronald M.; and Crockett, Gary B., to IEX Corporation. Method for planning, scheduling and managing personnel. 5,911,134, Cl. 705-9.000.
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Livesay, Richard E.; Bargfrede, Brent C.; Bender, John L.; Taylor, Greg O.; and Dawson, Phillip W., 5,909,962, Cl. 37-456.000.
Tipton, Sheryl A.; and Keil, Gary D., 5,910,223, Cl. 148-210.000.
Cathey, David A.; and Watkins, Charles, to Micron Technology, Inc. Field emission display. 5,910,705, Cl. 313-496.000.
Cathey, David A., Jr.: *See*—
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Caurant, Daniel: *See*—
Gasca, Jean-Philippe; Arpin, Michel; Malgrange, Denis; and Caurant, Daniel, 5,910,461, Cl. 501-35.000.
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Centre International De Recherches Dermatologiques Galderma: *See*—
Thoreau, Etienne; and Shroot, Braham, 5,910,508, Cl. 514-432.000.
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Chabagno, Jean-Michel: *See*—
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Chaconas, Peter Constantine, to Hand Tool Design Corporation. Wrench with supplementary driving lugs formed on its square cross-sectioned drive tang and interchangeable sockets therefor. 5,910,197, Cl. 81-124.600.
Chaen, Hiroto: *See*—
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Chang, Kuo-Jung: *See*—
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Chatterjee, Dilip K.: *See*—
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Cheang, Philip Hong Ning: *See*—
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Chen, Changsheng; Marcoux, Phil P.; Sander, Wendell B.; and Young, James L., to ChipScale, Inc. Wafer fabrication of die-bottom contacts for electronic devices. 5,910,687, Cl. 257-784.000.
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Chen, Zen Ming, to Tektro Technology Corporation. Adjustable brake lever assembly. 5,910,193, Cl. 74-489.000.
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Cheung, Gerald: *See*—
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Chicopee, Inc.: *See*—
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ChipScale, Inc.: *See*—
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Cho, Joong Myung; Choi, Deog Young; Kim, Chun Hyung; So, Hong Seob; Yang, Jae Young; Kim, In Soo; and Kim, Joo Ho, to Lucky Limited. HCV diagnostic agents. 5,910,405, Cl. 435-5.000.
Cho, Pyung-Dong: *See*—
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Cho, Won-bong, to Hyundai Motor Company. Vehicle brake cable tension adjustment apparatus. 5,910,194, Cl. 74-500.500.
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Chong, Joshua Anthony; Abdesken, Fereydon; and Osei-Gyimah, Peter, to Rohm and Haas Company. Method for preparing 3-amino substituted crotonates. 5,910,602, Cl. 560-172.000.
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Chromos Molecular Systems, Inc.: *See*—
Hadlaczky, Gyula; and Szalay, Aladar A., 5,910,429, Cl. 435-69.100.

Chrysler Corporation: *See*—
Uhlig, Robert P., 5,909,785, Cl. 188-250.00G.

Chu, Wayne K.; and Ruckel, Erwin R., to Arizona Chemical Company. Polyphenylene oxide delivery system for adhesive compositions. 5,910,526, Cl. 524-270.000.

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Church & Dwight Co., Inc.: *See*—
Lajoie, M. Stephen; Joseph, Amy L.; Jones, Keith A.; and Winston, Anthony E., 5,910,323, Cl. 424-717.000.

Cicha, Walter Vladimir; and Swanson, Donald Keith, to Du Pont de Nemours, E. I., and Company. Alkaline earth fluoride manufacturing process. 5,910,297, Cl. 423-490.000.

Ciesielski, Mary Gail: *See*—
Clark, Tracey A.; Ciesielski, Mary Gail; and O'Donnell, Kathleen D., 5,910,137, Cl. 604-387.000.

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Ciolek, Bernhard: *See*—
Kuhn, Helmut; Doerfler, Walter; Loew, Gerhard; and Ciolek, Bernhard, 5,910,974, Cl. 378-138.000.

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Circuits and Systems, Inc.: *See*—
Kats, Vyacheslav D.; and Gordon, Arnold S., 5,910,647, Cl. 177-210.0FP.

Cirrus Logic, Inc.: *See*—
Sharma, Sudhir; Runas, Michael E.; and Nally, Robert M., 5,910,919, Cl. 365-189.050.

Clairson, Inc.: *See*—
Daniels, Mark; Smith, Pam; McPhilliamy, Steve; VanAkkeren, John; Johnston, Damon; and Jaron, Mike, 5,909,936, Cl. 312-334.100.

Clariant Finance (BVI) Limited: *See*—
Rahman, M. Dalil; Lu, Ping-Hung; and Cook, Michelle, 5,910,559, Cl. 528-137.000.

Clariant GmbH: *See*—
Cosmo, Robert; and Dierdorf, Andreas, 5,910,605, Cl. 562-473.000.
Metz, Hans Joachim; and Weber, Joachim, 5,910,577, Cl. 534-742.000.

Clark, Frank J.: *See*—
Wang, Xiaorong; Clark, Frank J.; Takeichi, Hideo; Matsuse, Takahiro; Mashita, Naruhiko; and Toyosawa, Shinichi, 5,910,530, Cl. 524-534.000.

Clark, Gordon R.: *See*—
Sharma, Dinesh; Clark, Gordon R.; and Alton, Lawrence E., 5,910,876, Cl. 361-86.000.

Clark, Robert Burton, to Eonic Creations, Inc. Repair kit for adjustable headgear. 5,909,803, Cl. 2-195.200.

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Class, Kim A., to Honeywell, Inc. Predictive approach integrity. 5,910,788, Cl. 342-357.000.

Claydon, Anthony Peter J.; MacFarlane, Charles D.; Gammack, Richard J.; Jones, Anthony Mark; Robbins, William P.; and Barnes, Mark, to Discovision Associates. Signal processing apparatus and method. 5,910,960, Cl. 371-37.110.

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Bertolet, Allan Robert; Clinton, Kim P.N.; Gould, Scott Whitney; Keyser III, Frank Ray; Reny, Timothy Shawn; and Zittritsch, Terrance John, 5,910,733, Cl. 326-41.000.

Cloud, Eugene H.: *See*—
Beffa, Ray J.; Waller, William K.; Cloud, Eugene H.; Farnworth, Warren M.; and Nevill, Leland R., 5,910,921, Cl. 365-201.000.

COBE Laboratories, Inc.: *See*—
Truitt, Lori A.; Corbin, Frank, III; Lobdell, Donn D.; Miller, Douglas P.; Manica, Keith; Eilers, George J.; Johnson, Steven H.; and Leppert, Lawrence L., 5,910,252, Cl. 210-645.000.

Coca-Cola Company, The: *See*—
Credle, William S., Jr., 5,909,826, Cl. 222-78.000.

Cochran, Bruce Robert; Eberhardt, Christopher Michael; and Painter, John A., to Storz Instrument Co. Numeric keypad simulated on touchscreen. 5,910,139, Cl. 606-1.000.

Coffey, John R.; Cotton, Lawrence M.; and Carlson, Carl Christian, to S-B Power Tool Company. Adjustable sub-base for fixed-base router. 5,909,987, Cl. 409-131.000.

Coffman, Howard B. Arm warming sleeve. 5,909,801, Cl. 2-16.000.

Cohen, Leonard G., to Lucent Technologies Inc. Method for upgrading a hybrid fiber coax network to an all fiber network. 5,911,019, Cl. 385-24.000.

Cohen, Martin Frank: *See*—
Gregory, Richard Alan, Jr.; and Cohen, Martin Frank, 5,910,611, Cl. 564-497.000.

Cohn, Kyle A: *See*—
Rebotier, Thomas; and Cohn, Kyle A, 5,910,035, Cl. 441-74.000.

Coinstar, Inc.: *See*—
Beach, Kirk W.; and Coonan, Bruce, 5,909,793, Cl. 194-210.000.
Molbak, Jens H.; Lewis, Carol; Carlson, Johanna; and Doran, Michael, 5,909,794, Cl. 194-216.000.

Coleman, Charles, to Sierra Applied Sciences, Inc. Phase-shift power supply. 5,910,886, Cl. 363-17.000.

Colvin, Arthur E., Jr. Flourescence sensing device. 5,910,661, Cl. 250-573.000.

Commissariat a l'Energie Atomique: *See*—
Fedeli, Jean-Marc, 5,910,869, Cl. 360-113.000.

Compaq Computer Corporation: *See*—
Sharma, Dinesh; Clark, Gordon R.; and Alton, Lawrence E., 5,910,876, Cl. 361-86.000.
Whiteman, William F.; Goodrum, Alan L.; Cox, B. Tod; Basile, Barry S.; and Purcell, Brian T., 5,911,055, Cl. 395-309.000.
Wooten, David R., 5,911,152, Cl. 711-208.000.

Computer Motion, Inc.: *See*—
Wright, James; Wasti, Hamid; and Uecker, Darrin R., 5,911,036, Cl. 395-94.000.

Conant, Dale, to Healthline Laboratories, Inc. Topical analgesic using water soluble capsaicin. 5,910,512, Cl. 514-617.000.

Conexant Systems, Inc.: *See*—
Olafsson, Sverrir; and Rajpal, Sandeep, 5,910,959, Cl. 371-37.100.

Conner, Gary W. Apparatus for exercising abdominal muscles and method. 5,910,073, Cl. 482-129.000.

Conner, Michael Haden: *See*—
Acker, Liane Elizabeth; Conner, Michael Haden; and Martin, Andrew Richard, 5,911,076, Cl. 395-707.000.

Connor, Robert D.: *See*—
Mozelack, Brian; Connor, Robert D.; and Schmitt, Robert J., 5,910,229, Cl. 156-458.000.

Conroy, Michael D.; Johnson, Jay A.; Cybulski, Claude E.; and Cybulski, Eric R., to Conroy, Michael D.; and Johnson, Jay A. Kiln lid mounting assembly. 5,910,006, Cl. 432-250.000.

Cont-Asphalt Limited: *See*—
Lehmann, Peter; and Grisoni, Jacques, 5,909,730, Cl. 126-343.50A.

Conway, Brian: *See*—
Chowdhury, Geeta; Adams, William; Conway, Brian; and Sourirajan, Srinivasa, 5,910,366, Cl. 428-379.000.

Cook, Michelle: *See*—
Rahman, M. Dalil; Lu, Ping-Hung; and Cook, Michelle, 5,910,559, Cl. 528-137.000.

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Beach, Kirk W.; and Coonan, Bruce, 5,909,793, Cl. 194-210.000.

Corbett, Tim J.: *See*—
Farnworth, Warren M.; Wood, Alan G.; and Corbett, Tim J., 5,910,640, Cl. 174-50.000.

Corbin, Frank, III: *See*—
Truitt, Lori A.; Corbin, Frank, III; Lobdell, Donn D.; Miller, Douglas P.; Manica, Keith; Eilers, George J.; Johnson, Steven H.; and Leppert, Lawrence L., 5,910,252, Cl. 210-645.000.

Cornell Research Foundation, Inc.: *See*—
Blakely, Jack M.; Tanaka, So; Umbach, Christopher C.; and Tromp, Rudolf M., 5,910,339, Cl. 427-376.200.

Corning Incorporated: *See*—
Beall, George H.; Holland, Hans J.; and Kohli, Jeffrey T., 5,910,459, Cl. 501-8.000.

Corriveau, Michel; and Houde, Michel, to Telefonaktiebolaget LM Ericsson. Inter-exchange passing of hand-off related parameters. 5,911,122, Cl. 455-432.000.

Cosmo, Robert; and Dierdorf, Andreas, to Clariant GmbH. Process for the preparation of 3-hydroxy-2-methylbenzoic acid and 3-acetoxy-2-methylbenzoic. 5,910,605, Cl. 562-473.000.

Coteus, Paul William: *See*—
Cipolla, Thomas Mario; Coteus, Paul William; and Mok, Lawrence Shungwei, 5,910,883, Cl. 361-687.000.

Cotton, Lawrence M.: *See*—
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Council of Scientific & Industrial Research: *See*—
Rao, Panja Kanta; Rao, Kamaraju Seetha Rama; Rao, Vattikonda Venkata; Narayana, Kalavaru Venkata; Venugopal, Akula; Rao, Alla Venkata Rama; and Subrahmanyam, Machiraju, 5,910,465, Cl. 502-209.000.

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Chuck, George S.; Dooner, Hugo K.; Courtney-Gutterson, Neal; Keller, Janis; Nijjar, Charanjit S.; and Ralston, Edward J., 5,910,627, Cl. 800-205.000.

Courtoy NV: *See*—
Koch, Rudolf, 5,910,324, Cl. 425-345.000.

Covert, Charles Henry: *See*—
Meiller, Thomas Charles; Beadnell, Timothy Michael; and Covert, Charles Henry, 5,910,637, Cl. 96-135.000.

Cowan, Wavell F. Tensile strength tester with clamping load application control. 5,911,166, Cl. 73-833.000.

Cowell, Lowell A. Wheel lift head. 5,909,996, Cl. 414-563.000.

Cox, B. Tod: *See*—
Whiteman, William F.; Goodrum, Alan L.; Cox, B. Tod; Basile, Barry S.; and Purcell, Brian T., 5,911,055, Cl. 395-309.000.

Craggs, Gordon: *See*—
Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,910,346, Cl. 428-36.900.

Cramer, Palmer G : *See*—
Hammerstedt, Roy H.; Cramer, Palmer G.; and Barbato, Guy F., 5,910,568, Cl. 530-324.000.

Crane Co.: *See*—
Ranft, Philip Malone; Reese, Robert J.; and Walter, Frank Leonard, 5,909,823, Cl. 221-129.000.

Crane, Peter: *See*—
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Cranton, Wayne Mark: *See*—
Stevens, Robert; Cranton, Wayne Mark; and Thomas, Clive Barrington, 5,910,706, Cl. 313-498.000.

CRC for Waste Management and Pollution Control Limited: *See*—
Kopp, Clinton; Johnson, Warren; Day, Anthony; MacCormick, Antony; Markiewicz, Tomasz; Stollery, Gary; Thompson, Mark; Alexander, Brett; and Wende, Neil, 5,910,249, Cl. 210-617.000.

Credle, William S., Jr., to Coca-Cola Company, The. Round drink dispenser. 5,909,826, Cl. 222-78.000.

Creger, Todd D., to Caterpillar Inc. Apparatus and method for calibrating a computer based model of an attribute of a mobile machine. 5,910,176, Cl. 701-59.000.

Crimmin, Michael John: *See*—
Campion, Colin; Davidson, Alan Hornsby; Dickens, Jonathan Philip; and Crimmin, Michael John, 5,910,609, Cl. 562-621.000.

Cripe, Phil; and Mauldin, Cary M., to Exactech, Inc. Intramedullary alignment guide tool. 5,910,143, Cl. 606-87.000.

Crockett, Gary B.: *See*—
Castonguay, Ronald M.; and Crockett, Gary B., 5,911,134, Cl. 705-9.000.

Cross, Christopher G.: *See*—
Beer, Kenneth D.; Cross, Christopher G.; Thimons, Thomas V.; and Unites, Thomas P., 5,910,458, Cl. 442-367.000.

Crotzer, David R. Dust sensor apparatus. 5,910,700, Cl. 310-338.000.

Crown, Charles E.: *See*—
Richardson, Richard James; and Crown, Charles E., 5,910,083, Cl. 52-171.100.

Cruse, James P., to Applied Materials, Inc. Method and apparatus for monitoring processes using multiple parameters of a semiconductor wafer processing system. 5,910,011, Cl. 438-16.000.

CryoGen, Inc.: *See*—
Dobak, John D., III; Ghaerzadeh, Kambiz; and Yu, Xiaoyu, 5,910,104, Cl. 600-121.000.

Cryovac, Inc.: *See*—
Shah, Gautam P., 5,910,374, Cl. 428-474.400.

Csapo, John S., to Samsung Electronics Co., Ltd. Wireless internet network architecture for voice and data communications. 5,910,946, Cl. 370-328.000.

CSP Holdings, Inc.: *See*—
Ballard, Claudio R., 5,910,988, Cl. 380-24.000.

Cucchi, Pietro, to Pietro Cucchi S.p.A. Centering device for bars in automatic magazines and magazine for use therewith. 5,910,200, Cl. 82-126.000.

Cuenoud, Bernard: *See*—
Szostak, Jack W.; Cuenoud, Bernard; and Huizenga, David E., 5,910,408, Cl. 435-6.000.

Cuilleron, Yves-Claude: *See*—
Lupi-Chen, Nina; Mappus, Elisabeth; Fournier, Catherine; Barrande, Christophe; Portuesi, Sandrine; and Cuilleron, Yves-Claude, 5,910,575, Cl. 530-388.240.

Cummings, Gary Wayne; and Cummings, Robert. Composite wound dressing with separable components. 5,910,125, Cl. 602-58.000.

Cummings, Robert: *See*—
Cummings, Gary Wayne; and Cummings, Robert, 5,910,125, Cl. 602-58.000.

Cummins, Joseph M., to Texas A&M University System. Low-dose oral administration of interferons. 5,910,304, Cl. 424-85.700.

Cummins, Richard D. Air-levitated train. 5,909,710, Cl. 104-23.200.

Curiel, David T.; and Deshane, Jessy, to UAB Research Foundation. Methods for modulating protein function in cells using, intracellular antibody homologues. 5,910,486, Cl. 514-44.000.

Curtze, Jürgen: *See*—
Albert, Guido; Curtze, Jürgen; and Friedrichs, Edmund, 5,910,496, Cl. 514-237.500.

Cutler, George Robert: *See*—
Bhame, William H.; Cutler, George Robert; Rustom, Bassem; and Dick, Robert L., IV, 5,911,117, Cl. 455-90.000.

Cybulski, Claude E.: *See*—
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Cybulski, Eric R.: *See*—
Conroy, Michael D.; Johnson, Jay A.; Cybulski, Claude E.; and Cybulski, Eric R., 5,910,006, Cl. 432-250.000.

Cycle Time Corporation: *See*—
Thorne, Henry F., 5,910,719, Cl. 318-560.000.

Cypress Semiconductor Corp.: *See*—
Synder, Warren S.; and Williams, Timothy J., 5,910,742, Cl. 327-165.000.

Cypros Pharmaceutical Corp.: *See*—
Marangos, Paul J.; Fox, Anthony W.; and Sullivan, Brian W., 5,910,127, Cl. 604-49.000.

Czauderna, Bernhard: *See*—
Güntherberg, Norbert; Hofmann, Jürgen; Ohlig, Hilmar; Mailahn, Elmar; Bus, Klaus; Czauderna, Bernhard; and Grabowski, Sven, 5,910,276, Cl. 264-101.000.

Dabi, Shmuel; and Kataria, Ram L., to McNeil-PPC, Inc. Melt processable biodegradable compositions and articles made therefrom. 5,910,520, Cl. 523-128.000.

Daewoo Electronics Co., Ltd.: *See*—
Jang, Ho-Jun, 5,909,854, Cl. 242-356.000.

Daewoo Telecom Ltd.: *See*—
Ahn, Bo Young; and Jo, Sung Chil, 5,911,026, Cl. 385-134.000.

Daido Tokushuko Kabushiki Kaisha: *See*—
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Daikin Industries, Ltd.: *See*—
Aoki, Keisuke; Yamagata, Kazuto; Ando, Keigo; Kamada, Masashi; Kinoshita, Kanjiro; and Kimura, Kansuke, 5,910,045, Cl. 454-186.000.

Daimler-Benz AG: *See*—
Schade, Marco; Schmidt, Erwin; and Sumser, Siegfried, 5,910,000, Cl. 415-158.000.

Daimler-Benz Aktiengesellschaft: *See*—
Boegner, Walter; Haak, Karl-Ernst; Krutzsch, Bernd; Verrelst, Wim; Voigtlaender, Dirk; Wenninger, Guenter; and Wirbeleit, Friedrich, 5,910,097, Cl. 60-278.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Ikuta, Kunio, 5,911,009, Cl. 382-237.000.

Dalcos S.R.L.: *See*—
Zanette, Donato, 5,909,835, Cl. 226-112.000.

Dal Din, Giovanni: *See*—
Cavasin, Giuseppe; and Dal Din, Giovanni, 5,909,850, Cl. 24-71.0SK.

Dalinkiewicz, Nicholas, to Telstra Corporation Limited. Anchor plate. 5,909,920, Cl. 296-24.100.

Danait, Sachin Waman: *See*—
Lin, Jyh-Han; Achyutuni, Pavan Jyotsna; Danait, Sachin Waman; Briancon, Alain Charles Louis; and Hill, Casey Thomas, 5,911,137, Cl. 705-37.000.

Dando, Jonathan S.: *See*—
Rigg, Richard J.; Chen, Jingyi; Dando, Jonathan S.; Plavec, Ivan; Forestell, Sean P.; and Bohnlein, Ernst, 5,910,434, Cl. 435-172.300.

Dang, Mieu-Hong: *See*—
Shaffer, Shmuel; Beyda, William J.; and Dang, Mieu-Hong, 5,911,123, Cl. 455-554.000.

Dangelo, Carlos; and Nagasamy, Vijay, to LSI Logic Corporation. Specification and design of complex digital systems. 5,910,897, Cl. 364-488.000.

D' Angelo, Joseph P., to Americare Health Scan Inc. Saliva collector with an aspirating pipette. 5,910,122, Cl. 600-573.000.

Daniel, Eward A.: *See*—
Short, Michael L.; Bornhorst, John B.; Daniel, Eward A.; and Homan, Dale A., 5,909,705, Cl. 100-214.000.

Daniel, Maurice; Pristash, David J.; and Miller, Michael D. Icosahedron decimal dice. 5,909,874, Cl. 273-146.000.

Daniels, Mark; Smith, Pam; McPhilliamy, Steve; VanAkkeren, John; Johnston, Damon; and Jaron, Mike, to Clairson, Inc. Closet drawer system. 5,909,936, Cl. 312-334.100.

Daoud, Bassel H., to Lucent Technologies Inc. Expandable enclosure for telecommunications applications. 5,910,642, Cl. 174-57.000.

Darwin Discovery Limited: *See*—
Gennery, Brian Albert, 5,910,502, Cl. 514-330.000.
McCague, Raymond; and Wang, Shouming, 5,910,601, Cl. 558-354.000.

Data General Corporation: *See*—

Peterson, Gary S.; Brennan, Matthew M.; and Decrescenzo, Robert, 5,911,150, Cl. 711-162.000.
Datascope Investment Corp.: *See*—
Saper, Lawrence; Rowe, Stanton; and Leschinsky, Boris, 5,910,103, Cl. 600-18.000.
Datzmann, Gabriele: *See*—
Thiel, Norbert; and Datzmann, Gabriele, 5,910,273, Cl. 264-16.000.
Dauliach, Michel Henri. Electrical cooking apparatus for cooking precooked, deep-frozen or fresh food, of the fryer type, with no oil bath. 5,910,264, Cl. 219-411.000.
Davidson, Alan Hornsby: *See*—
Campion, Colin; Davidson, Alan Hornsby; Dickens, Jonathan Philip; and Crimmin, Michael John, 5,910,609, Cl. 562-621.000.
Davies, Huw Maelor; Hawkins, Deborah; Nelsen, Janet; and Lassner, Michael. Plant lysophosphatidic acid acyltransferases. 5,910,630, Cl. 800-295.000.
Davis, Bradley C.; and Boone, Michael K., to Boone International, Inc. Multi-purpose hook. 5,910,351, Cl. 428-100.000.
Davis, John P., to Baker Hughes Incorporated. Retrievable whipstock. 5,909,770, Cl. 166-117.600.
Davison, Donald R. Full body shower system. 5,909,969, Cl. 4-569.000.
Dawson, Phillip W.: *See*—
Livesay, Richard E.; Bargfrede, Brent C.; Bender, John L.; Taylor, Greg O.; and Dawson, Phillip W., 5,909,962, Cl. 37-456.000.
Day, Anthony: *See*—
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DCV, Inc.: *See*—
Brodmann, George L., 5,910,622, Cl. 8-182.000.
Deacon, David A.G.: *See*—
Bischel, William K.; Brinkman, Michael J.; Deacon, David A.G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,911,018, Cl. 385-16.000.
De Andrade, John, to Ani Mining Services Ltd. Vehicle for underground mine shafts. 5,909,780, Cl. 180-9.580.
Deason, William S., to IMI Norgren Limited. Releasable push-in tube couplings. 5,910,280, Cl. 264-296.000.
Debe, Mark K.; Larson, James M.; Balsimo, William V.; Steinbach, Andrew J.; and Ziegler, Raymond J., to Minnesota Mining and Manufacturing Company. Membrane electrode assemblies. 5,910,378, Cl. 429-42.000.
DeBoer, Charles D.: *See*—
Fassler, Werner; DeBoer, Charles D.; and Pickering, James E., 5,910,813, Cl. 347-215.000.
De Boer, Lex; and Van Der Wildt, Ingrid Francisca Caroline, to Gist-Brocades, N.V. Microbial strains producing sphingolipid bases. 5,910,425, Cl. 435-41.000.
DeBoer, Scott Jeffrey; Gealy, F. Daniel; and Thakur, Randhir P. S., to Micron Technology, Inc. Semiconductor circuit components and capacitors. 5,910,880, Cl. 361-311.000.
DeCarlo, Alfred F., Jr.; and Noiles, Douglas G., to Johnson & Johnson Professional, Inc. Implantable article with ablated surface and method of forming same. 5,910,173, Cl. 623-66.000.
Deceuninck, Gino L.: *See*—
Vandendriessche, Jean-Pierre; Deneir, Stephan P.G.; Depreitere, Dries M.J.; and Deceuninck, Gino L., 5,910,067, Cl. 477-92.000.
Deck, Philip D.: *See*—
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Deckel Maho GmbH: *See*—
Hoppe, Gerd; Geissler, Alfred; and Schäfer, Karl-Heinz, 5,909,988, Cl. 409-198.000.
DeClue, Larry W.: *See*—
Bolua, Luis Sergio V.; Hoang, Tuong Hai; Lo, Tony S.; and DeClue, Larry W., 5,910,873, Cl. 361-56.000.
Decora, Incorporated: *See*—
Smith, John Ralph, 5,910,535, Cl. 524-588.000.
Decrescenzo, Robert: *See*—
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DeHart, Jeffrey: *See*—
Atwater, James E.; Akse, James R.; and DeHart, Jeffrey, 5,910,448, Cl. 436-133.000.
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Shkolnikov, Yury; and Deieso, Tony, 5,909,836, Cl. 227-8.000.
Deinhart, Klaus; Gligor, Virgil; Lingenfelder, Christoph; and Lorenz, Sven, to International Business Machines Corporation. Method and system for advanced role-based access control in distributed and centralized computer systems. 5,911,143, Cl. 707-103.000.
DeJaco, Andrew P. Method and apparatus for performing speech frame encoding mode selection in a variable rate encoding system. 5,911,128, Cl. 704-221.000.
Dekalb Genetics Corporation: *See*—
Boerboom, Marvin L., 5,910,635, Cl. 800-320.100.
Wickersham, Dale S., 5,910,625, Cl. 800-200.000.
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Maloney, James G.; and Mrenna, Stephen A., 5,910,758, Cl. 335-35.000.
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Organek, Gregory J.; and Preston, David M., 5,910,061, Cl. 475-149.000.
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Elmerick, Donald: *See—*
Peters, Richard K.; and Elmerick, Donald, 5,910,109, Cl. 600-316.000.

Elst, Kathy: *See—*
De Keyzer, René; Loccufier, Johan; and Elst, Kathy, 5,910,402, Cl. 430-600.000.

EMBOL-X, Inc.: *See—*
Tsugita, Ross S.; Maahs, Tracy D.; and Jang, Yue-Teh, 5,910,154, Cl. 606-200.000.

Embree, Paul M.: *See—*
Mercs, Laura; Embree, Paul M.; and Barnes, Casper W., 5,910,995, Cl. 381-106.000.

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Peters, Richard K.; and Elmerick, Donald, 5,910,109, Cl. 600-316.000.

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Amonett, Daniel Keith; and Burgin, Henry Earl, 5,910,649, Cl. 200-38.00R.

Emma, Philip George: *See—*
Dhong, Sang Hoo; Emma, Philip George; Reohr, William Robert; and Silberman, Joel Abraham, 5,911,153, Cl. 711-218.000.

Enari, Masahiko: *See—*
Fujii, Akio; Enari, Masahiko; and Satake, Yoshifumi, 5,911,033, Cl. 386-109.000.

Endo, Atsushi; and Suda, Yasumasa, to Toyo Ink Manufacturing Co., Ltd. Process for the production of copper phthalocyanine. 5,910,585, Cl. 540-144.000.

Endovascular Technologies, Inc.: *See—*
Hayashi, Reid, 5,910,144, Cl. 606-108.000.

Eniricerche S.p.A.: *See*—
Carluccio, Luciano; Millini, Roberto; and Bellussi, Giuseppe, 5,910,299, Cl. 423-706.000.

Enomoto, Jun, to Nok Corporation. Method for manufacturing a bellows. 5,910,278, Cl. 264-138.000.

Enomoto, Takuro: *See*—
Kagawa, Takashi; Yoshikawa, Takao; and Enomoto, Takuro, 5,911,028, Cl. 386-2.000.

Enserink, Anton Rudolf, to Catalyst Corporate Development B.V. Neck connection for a stringed instrument made in one piece, and method for the production thereof. 5,911,168, Cl. 84-291.000.

Environ Products, Inc.: *See*—
Webb, Michael C., 5,911,155, Cl. 73-40.50R.

EnviroSurgical, Inc.: *See*—
Skalla, Randy Marc; Ahrens, Carl Austin; Garner, Robert Keith, Jr.; and Wilkinson, Bradley Carl, 5,910,291, Cl. 422-171.000.

Eonic Creations, Inc.: *See*—
Clark, Robert Burton, 5,909,803, Cl. 2-195.200.

EP Technologies, Inc.: *See*—
Koblish, Josef V.; and Fleischman, Sidney D., 5,910,129, Cl. 604-95.000.

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Wilson, Robby W.; Bray, Bryan Kenneth; and Sullivan, Paul O., 5,910,126, Cl. 602-75.000.

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St. Clair, David John; and Erickson, James Robert, 5,910,541, Cl. 525-99.000.
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Erickson, Mark T.: *See*—
Newton, Robert K.; and Erickson, Mark T., 5,910,207, Cl. 99-349.000.

Ericsson Inc.: *See*—
Andrews, Craig A., 5,911,121, Cl. 455-418.000.
Dent, Paul W.; and Ramesh, Rajaram, 5,910,182, Cl. 714-786.000.
Mendolia, Gregory S., 5,910,025, Cl. 439-76.100.

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Gani, Mary Susan Jean; Wirth, Hans-Jurgen; Aguilar, Marie Isabel; Hearn, Milton Thomas William; Vanselow, Donald George; Cheang, Philip Hong Ning; and Eriksson, Kjell-Ove, 5,910,462, Cl. 501-80.000.

Ernst, Eberhard; Reussner, Jens; and Neissl, Wolfgang, to Borealis AG. Catalyst supports, supported metallocene catalysts and their use for the preparation of polyolefins. 5,910,463, Cl. 502-107.000.

Erskine, David J., to University of California, The Regents of the. White light velocity interferometer. 5,910,839, Cl. 356-345.000.

Ersler, Donald J.: *See*—
Rosenberg, Mark R.; and Ersler, Donald J., 5,910,147, Cl. 606-131.000.

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Ghent, William R., deceased; and Eskin, Bernard A., 5,910,318, Cl. 424-451.000.

Espelage, Paul Martin: *See*—
Lyons, James Patrick; Vlatkovic, Vlatko; Espelage, Paul Martin; and Esser, Albert Andreas Maria, 5,910,892, Cl. 363-98.000.

Esperandieu, Jean Guy; and José Sotiriou, Robert Paul, to Eurocopter France. Device for guiding, driving, and locking a slot-in module of electrical or electronic equipment in a cabinet. 5,909,935, Cl. 312-333.000.

Esser, Albert Andreas Maria: *See*—
Lyons, James Patrick; Vlatkovic, Vlatko; Espelage, Paul Martin; and Esser, Albert Andreas Maria, 5,910,892, Cl. 363-98.000.

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Bates, Darryle E.; and Kalanish, Scott S., 5,909,830, Cl. 222-327.000.

Eto, Tanenao: *See*—
Kitamura, Kazuo; Kangawa, Kenji; Masuo, Hisayuki; and Eto, Tanenao, 5,910,416, Cl. 435-7.100.

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Tsai, Fu-Jya; and Etzel, Brian T., 5,910,545, Cl. 525-178.000.

Eurocopter France: *See*—
Esperandieu, Jean Guy; and José Sotiriou, Robert Paul, 5,909,935, Cl. 312-333.000.

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Olin, Henry; Lindroos, Gunner; and Mattsson, Roland, 5,909,968, Cl. 4-431.000.

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Molvig, Kim; Chen, Hudong; Teixeira, Christopher M.; Remondi, Stephen; Hill, David Lawrence; Gang, Fongyan; Alajbegovic, Ales; and Hoch, James E., Jr., 5,910,902, Cl. 364-578.000.

Exactech, Inc.: *See*—
Cripe, Phil; and Mauldin, Cary M., 5,910,143, Cl. 606-87.000.

Exar Corporation: *See*—
Stanojevic, Silvo, 5,910,739, Cl. 327-143.000.

Exxon Chemical Patents Inc: *See*—
Patel, Raman; Abdou-Sabet, Sabet; and Wang, Hsien-Chang, 5,910,543, Cl. 525-166.000.

Exxon Chemical Patents, Inc.: *See*—
Jones, Frank N.; Fu, Shou-Kuan; Jing, Wen; Zhang, Suru; and Swarup, Vijay, 5,910,563, Cl. 528-272.000.

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Bragg, James R., 5,910,467, Cl. 507-202.000.

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Grossman, Matthew J.; Siskin, Michael; Ferrughelli, David T.; Lee, M. Kathryn; and Senius, James D., 5,910,440, Cl. 435-282.000.
Halbert, Thomas R.; Riley, Kenneth L.; Trachte, Kenneth L.; and Vannauker, David L., 5,910,242, Cl. 208-263.000.

Fabri, Franca: *See*—
Alfano, Stefano; Bianchetti, Giulia Ottavia; Fabri, Franca; and Pace, Luigi, 5,910,473, Cl. 510-191.000.

Faget, Roy R; and Larson, Ronald D, to Hewlett-Packard Co. High speed interconnect bus. 5,911,056, Cl. 395-309.000.

Fairbairn, Kevin: *See*—
Blum, Rick; Fairbairn, Kevin; and Lane, Christopher, 5,909,994, Cl. 414-217.000.

Fakieh, Abdul Rahman. Rotisserie broiler. 5,910,332, Cl. 426-523.000.

Falicoff, Waqidi; and Sandner, Harald. Table tennis rubber solvent and adhesive systems. 5,910,528, Cl. 524-315.000.

Falk, Rudolf Edgar; and Asculai, Samuel Simon, to Hyal Pharmaceutical Corporation. Topical composition containing hyaluronic acid and NSAIDS. 5,910,489, Cl. 514-54.000.

Fanuc, Ltd.: *See*—
Fujibayashi, Kentaro; and Murakami, Kunihiko, 5,911,125, Cl. 702-141.000.
Mori, Atsushi; and Nakata, Yoshinori, 5,910,261, Cl. 219-121.710.

Faraj, Abdul-Razzak. Notepad with pen and key holder. 5,909,898, Cl. 281-30.000.

Farnham, Floyd R., III: *See*—
O'Mahony, John J.; and Farnham, Floyd R., III, 5,909,731, Cl. 128-205.240.

Farnworth, Warren M.; Wood, Alan G.; and Corbett, Tim J., to Micron Technology, Inc. Electrical contact assembly for use in a multi-die encapsulation device. 5,910,640, Cl. 174-50.000.

Farnworth, Warren M.: *See*—
Beffa, Ray J.; Waller, William K.; Cloud, Eugene H.; Farnworth, Warren M.; and Nevill, Leland R., 5,910,921, Cl. 365-201.000.

Farr, Stephan J.; Rowe, Antony M.; and Rubsamen, Reid, to Aradigm Corporation. Method of intrapulmonary administration of a narcotic drug. 5,910,301, Cl. 424-45.000.

Farrar, Douglas M., to Apple Computer, Inc. Method and apparatus for a speaker for a personal computer for selective use as a conventional speaker or as a sub-woofer. 5,910,991, Cl. 381-59.000.

Farrar, Ralph C., Jr.: *See*—
Trepka, William J.; Moczygemba, George A.; Stacy, Nathan E.; and Farrar, Ralph C., Jr., 5,910,546, Cl. 525-314.000.

Fassler, Werner; DeBoer, Charles D.; and Pickering, James E., to Eastman Kodak Company. Accurately locating color donor element in making color filter arrays. 5,910,813, Cl. 347-215.000.

Fedeli, Jean-Marc, to Commissariat a l'Energie Atomique; and Silmag. Planar magnetic head with longitudinal multilayer magnetoresistance. 5,910,869, Cl. 360-113.000.

Feinberg, Isadore. Loss limit method for slot machines. 5,910,048, Cl. 463-25.000.

Feinberg, Jerry M.; Johnson, Christopher H.; and Stalcup, Bruce W., to PRC Inc. Method and apparatus for verifying, analyzing and optimizing a distributed simulation. 5,910,903, Cl. 364-578.000.

Feinberg, Richard: *See*—
Fontenot, Mark G.; Feinberg, Richard; and Katz, Howard, 5,910,816, Cl. 348-65.000.

Feingold, Vladimir; and Osipov, Alexei V., to STAAR Surgical Company Inc. Biocompatible, optically transparent, ultraviolet light absorbing, polymeric material based upon collagen and method of making. 5,910,537, Cl. 525-64.000.

Fellers, Billy D.; Freedman, Arthur J.; and Laronge, Thomas M., to Electric Power Research Institute, Inc. Methods for control and mitigation of molluscs. 5,910,507, Cl. 514-400.000.

Fenn, Thomas; and Carey, Brian Robert, to Siemens Information and Communication Networks, Inc. Ground start and tip ground detection without the use of -48V or tip bait circuit. 5,910,985, Cl. 379-382.000.

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Schrüfer, Andreas; Ittner, Walter; Svejkovsky, Reinhard; Schöpf, Andreas; and Ziegenbein, Dieter, 5,909,878, Cl. 277-398.000.

Ferbus, Jean-Francois: *See*—
Violi, Jean-Charles; Violi, Raymond; and Ferbus, Jean-Francois, 5,910,210, Cl. 99-483.000.

Ferencz, Richard L.: *See*—
McAmish, Larry H.; Ferencz, Richard L.; and Wilkinson, Gregg T., 5,910,225, Cl. 156-229.000.

Ferguson, Walter J., to Dresser Industries, Inc. Dual mode vent plug assembly for an enclosed housing. 5,911,163, Cl. 73-738.000.

Ferrari, Vincent J.: *See*—
Wong, Patrick S.-L.; Roth, Nathan; and Ferrari, Vincent J., 5,910,321, Cl. 424-473.000.

Ferrell, Gary W. Chemical bath apparatus. 5,909,741, Cl. 134-1.000.

Ferrughelli, David T.: *See*—
Grossman, Matthew J.; Siskin, Michael; Ferrughelli, David T.; Lee, M. Kathryn; and Senius, James D., 5,910,440, Cl. 435-282.000.

Fessmann, Klaus-Dieter, to Germos-Fessmann GmbH & Co. KG. Process and apparatus for smoking foodstuffs. 5,910,330, Cl. 426-314.000.

Feumi-Jantou, Christiane B.; Orr, Zoe; and Green, Jeffrey K., to Eastman Kodak Company. Method of processing a photographic product. 5,910,397, Cl. 430-428.000.

Fey, Edmond Otto; Lyjak, Kenneth Stanley; and Trevitt, Donna Jean, to International Business Machines Corporation. Method of controlling the spread of an adhesive on a circuitized organic substrate. 5,910,341, Cl. 427-534.000.

Fey, Peter: *See—*
Mittendorf, Joachim; Fey, Peter; Junge, Bodo; Kaulen, Johannes; van Laak, Kai; Meier, Heinrich; and Schohe-Loop, Rudolf, 5,910,593, Cl. 546-278.400.

Fiberweb France SA: *See—*
Ehret, Philippe, 5,910,368, Cl. 428-411.100.

Fichtel & Sachs AG: *See—*
Lohaus, Norbert, 5,909,790, Cl. 192-213.220.

Fiedler, Bernd: *See—*
Bender, Klaus; Wachter, Robert; and Fiedler, Bernd, 5,910,082, Cl. 52-144.000.

Field, Simon J.: *See—*
Bischel, William K.; Brinkman, Michael J.; Deacon, David A.G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,911,018, Cl. 385-16.000.

Fieldtech Avionics and Instruments, Inc.: *See—*
Morgan, Shanon; Keith, Michael W.; Nelms, Kevin P.; and Mills, David, 5,910,106, Cl. 600-169.000.

Figge, Dieter, to Mannesmann Aktiengesellschaft. Device for the guidance of hot-rolled strip through an inductor. 5,910,185, Cl. 72-202.000.

Filimonov, Alexandr Iosifovich. Filimonov hybrid dirigible craft. 5,909,857, Cl. 244-29.000.

Filipiak, Michael A.: *See—*
Herbermann, Alfred F.; Land, Jacob J. Van't; and Filipiak, Michael A., 5,909,998, Cl. 414-752.000.

Filipovic, Daniel; and Younis, Saed G., to Qualcomm Incorporated. Frequency demodulator with resampled output. 5,910,752, Cl. 329-341.000.

Finn, Patrick W. Pliers-based, combination tool. 5,910,174, Cl. 7-127.000.

Firma Carl Freudenberg: *See—*
Hausdorf, Jörg; and Link, Eberhard, 5,910,275, Cl. 264-49.000.

First Opinion Corporation: *See—*
Iliff, Edwin C., 5,910,107, Cl. 600-300.000.

Fiscella, Joseph A.: *See—*
Scagnelli, John B.; and Fiscella, Joseph A., 5,910,047, Cl. 463-17.000.

Fischel, Harold; and Handal, Anthony H. Laptop carrying case. 5,909,806, Cl. 206-320.000.

Fischell, David R.: *See—*
Fischell, Robert E.; Fischell, David R.; and Fischell, Tim A., 5,910,145, Cl. 606-108.000.

Fischell, Robert E.; Fischell, David R.; and Fischell, Tim A. Stent delivery catheter system. 5,910,145, Cl. 606-108.000.

Fischell, Tim A.: *See—*
Fischell, Robert E.; Fischell, David R.; and Fischell, Tim A., 5,910,145, Cl. 606-108.000.

Fischer, Eric Michael: *See—*
Kowalewski, Thomas Joseph; Karl, Matthew John; Grzanka, Thomas; Milne, Robert; Fischer, Eric Michael; and Suratkal, Vasanth, 5,909,918, Cl. 292-199.000.

Fischer, Wilfried; and Klokkers, Karin, to Hexal AG. Tablet or capsule having a content of stable ranitidine hydrochloride form 1. 5,910,320, Cl. 424-465.000.

Fischer, Wolfgang H.: *See—*
Behan, Dominic P.; Vale, Wylie W., Jr.; Fischer, Wolfgang H.; and Lowry, Philip J., 5,910,428, Cl. 435-69.100.

Fischetti, Vincent A.: *See—*
Rocha, Claudia; and Fischetti, Vincent A., 5,910,441, Cl. 435-320.100.

Fisher, Myles. Construction block structure. 5,910,086, Cl. 52-306.000.

Fisher, Paul T.: *See—*
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Owens, David H.; and Fisher, Stephen, 5,911,067, Cl. 395-680.000.

Fisher, Yuval: *See—*
Rogovin, Daniel; Shen, Tsae-Pyng Janice; and Fisher, Yuval, 5,910,793, Cl. 345-100.000.

Fiskars Inc.: *See—*
An, Suk Ku; Siegfried, Norman D.; and Adkinson, Brian L., 5,909,709, Cl. 101-405.000.

Fit Carrosserie SA: *See—*
Denoual, Daniel; and Perroux, Maurice, 5,909,762, Cl. 160-201.000.

Fitz, Charles Edwin, Jr.; Schollenberger, Marlin Robert; and Folk, Kenneth Foster, to Whitaker Corporation, The. Shut height adjustment mechanism for a terminal applicator. 5,909,913, Cl. 29-753.000.

Flaherty, Paul A., to Digital Equipment Corporation. Multiple wavelength transceiver. 5,910,851, Cl. 359-110.000.

Flanagan, John. Area warning system for earthquakes and other natural disasters. 5,910,763, Cl. 340-286.020.

Fleisch, Jerome H.; Jackson, William T.; and Sawyer, Jason S., to Eli Lilly and Company. Leukotriene antagonists for use in the treatment or inhibition of oral squamous cell carcinoma. 5,910,505, Cl. 514-381.000.

Fleischman, Sidney D.: *See—*
Koblish, Josef V.; and Fleischman, Sidney D., 5,910,129, Cl. 604-95.000.

Flintrop, Thomas: *See—*
Krauss, Christian; Najork, Rolf; Wollny, Thomas; and Flintrop, Thomas, 5,910,068, Cl. 477-109.000.

Florent, Raoul: *See—*
Bernard, Franck; and Florent, Raoul, 5,911,012, Cl. 382-260.000.

Flory, Kevin J.; and Keller, James A., to Diamond Multimedia Systems, Inc. Context virtualizing device driver architecture. 5,910,180, Cl. 709-301.000.

Floyd, Carey E.; and Chotas, Harrel G., to Duke University. Anatomic phantom for evaluation of projection radiographic imaging systems. 5,910,975, Cl. 378-207.000.

FMC Corporation: *See—*
Schwindeman, James Anthony; Quirk, Roderic Paul; Kamienski, Conrad William, deceased, 5,910,547, Cl. 525-332.800.

Fogle, Ronald L.: *See—*
Mistyurik, John D.; Makley, James A.; Hamisch, Paul H., Jr.; and Fogle, Ronald L., 5,910,227, Cl. 156-384.000.

Folk, Kenneth Foster: *See—*
Fitz, Charles Edwin, Jr.; Schollenberger, Marlin Robert; and Folk, Kenneth Foster, 5,909,913, Cl. 29-753.000.

Fong, Yupin Kawing: *See—*
Guterman, Daniel C.; Samachisa, Gheorghe; Fong, Yupin Kawing; and Harari, Eliyahou, 5,910,915, Cl. 365-185.280.
Guterman, Daniel C.; Samachisa, Gheorghe; Fong, Yupin Kawing; and Harari, Eliyahou, 5,910,925, Cl. 365-230.010.

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Fontenot, Mark G.; Feinberg, Richard; and Katz, Howard, to Stryker Corporation. Imaging system with independent processing of visible an infrared light energy. 5,910,816, Cl. 348-65.000.

Foote, Mason Scott: *See—*
O'Keeffe, William F.; and Foote, Mason Scott, 5,910,620, Cl. 65-60.500.

Ford Global Technologies, Inc.: *See—*
Betz, Christian; and Zhang, Tong, 5,909,888, Cl. 280-124.166.
Hepburn, Jeffrey Scott; and Baker, Richard Eugene, 5,910,096, Cl. 60-274.000.
Krauss, Christian; Najork, Rolf; Wollny, Thomas; and Flintrop, Thomas, 5,910,068, Cl. 477-109.000.
Malson, Steven George, 5,910,175, Cl. 701-57.000.

Ford, James D.: *See—*
Nuñez, Ivan M.; Molock, Frank F.; Elliott, Laura D.; and Ford, James D., 5,910,519, Cl. 523-106.000.

Ford, Jesse Carl; and Polen, Larry Alexander, to GEC Alsthom Cyril Bath. Stretch-forming machine with servo-controlled curving jaws. 5,910,183, Cl. 72-21.500.

Ford, Michael L.: *See—*
Haramoto, Cary; Ford, Michael L.; and Wilson, Tom C., 5,910,165, Cl. 62-474.000.

Ford Motor Company: *See—*
Belke, Robert Edward, Jr.; Trublowski, John; and Todd, Michael George, 5,909,839, Cl. 228-248.100.

Fordyce, Graham Thomas, to Sundstrand Corporation. Gate drive for a power switching device. 5,910,746, Cl. 327-379.000.

Forestell, Sean P.: *See—*
Rigg, Richard J.; Chen, Jingyi; Dando, Jonathan S.; Plavec, Ivan; Forestell, Sean P.; and Bohnlein, Ernst, 5,910,434, Cl. 435-172.300.

Foricher, Joseph; and Schmid, Rudolf, to Hoffmann-La Roche Inc. Process for making α,β-unsaturated carboxylic acids. 5,910,606, Cl. 562-495.000.

Forjas Taurus S/A: *See—*
Kleinpaul, Cláudio Alexandre, 5,910,003, Cl. 42-70.110.

Fortenbery, Mark D.; Stubbs, Cameron M.; Payannet, Dominique J.; and Patience, Robert, to Intergraph Corporation. OLE for design and modeling. 5,910,804, Cl. 345-419.000.

Foshee, Phillip D., Jr.: *See—*
Kim, Jaeho; and Foshee, Phillip D., Jr., 5,910,120, Cl. 600-509.000.

Foster, Michael Ralph; Vaneman, Gerald Leroy; Heather, Jesse Allan; Serrels, Dana Michael; and Chen, David Kwo-Shyong, to General Motors Corporation. Method of making a catalytic converter. 5,909,916, Cl. 29-890.000.

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Fournier, Catherine: *See—*
Lupi-Chen, Nina; Mappus, Elisabeth; Fournier, Catherine; Barrande, Christophe; Portuesi, Sandrine; and Cuilleron, Yves-Claude, 5,910,575, Cl. 530-388.240.

Fox, Anthony W.: *See—*
Marangos, Paul J.; Fox, Anthony W.; and Sullivan, Brian W., 5,910,127, Cl. 604-49.000.

FRA. MO Snc di Franca Riva & C: *See—*
Moeder, Claudio, 5,910,226, Cl. 156-304.500.

Fraley, Christopher L.: *See—*
Zimmerman, Christopher A.; and Fraley, Christopher L., 5,911,068, Cl. 395-682.000.

Francel, Josef; and Duck, Charles P. Composite glass article and method of manufacture. 5,910,371, Cl. 428-428.000.

Francois, Marc: *See—*
Guevel, Jean; Francois, Marc; and Bontemps, Guy, 5,910,361, Cl. 428-364.000.

Franklin, Larry A., to Merit, Inc. Elastic band holder. 5,909,809, Cl. 206-525.000.

Frank' s Casing Crews and Rental Tools, Inc.: *See—*

Castille, Dale J.; Webre, Michael; and Mosing, Donald, 5,909,768, Cl. 166-77.100.

Franzen, Jochen: *See—*
Köster, Claus; Holle, Armin; and Franzen, Jochen, 5,910,656, Cl. 250-287.000.

Franzoso, Federico: *See—*
Fontana, Flavio; Franzoso, Federico; Ravasio, Giuseppe; and Zammarchi, Claudio, 5,910,852, Cl. 359-156.000.

Franzus Company, Inc.: *See—*
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Frazier, Kevin M.: *See—*
Dorsey, Paul C.; Frazier, Kevin M.; Breig, David J.; and Duymazlar, Mehmet H., 5,910,690, Cl. 307-141.000.

Free-Zee, Inc.: *See—*
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Freedman, Arthur J.: *See—*
Fellers, Billy D.; Freedman, Arthur J.; and Laronge, Thomas M., 5,910,507, Cl. 514-400.000.

Freeman, David Edward: *See—*
Harris, Harold Robert; Aral, Halil; Bruckard, Warren John; Freeman, David Edward; Houchin, Martin Richard; McDonald, Kenneth Joun; Sparrow, Graham Jeffrey; and Grey, Ian Edward, 5,910,621, Cl. 75-399.000.

Freeman, Michael Bennett; Larson, Gary Robert; Merritt, Richard Foster; Paik, Yi Hyon; Shulman, Jan Edward; Swift, Graham; and Wilczynski, Robert, to Rohm and Haas Company. Detergent and dispersant compositions from high temperature polymerization products. 5,910,531, Cl. 524-556.000.

Freestone, Robert Eugene: *See—*
Streit, Leon George; and Freestone, Robert Eugene, 5,910,633, Cl. 800-312.000.

French, Cyril L. A.: *See—*
French, Roland C. A.; and French, Cyril L. A., 5,909,832, Cl. 224-547.000.

French, Roland C. A.; and French, Cyril L. A. Vehicle cleaning kit. 5,909,832, Cl. 224-547.000.

Freshman, Richard K.: *See—*
Sachs, Gregory D.; Freshman, Richard K.; and Griffith, Thomas J., 5,909,890, Cl. 280-284.000.

Frey, Cheryl M.; and Wilson, Bruce B., to Minnesota Mining and Manufacturing Company. Retroreflective sheeting with coated back surface. 5,910,858, Cl. 359-534.000.

Fried, Karen G., to Ideal Ideas, Inc. Acne treatment composition with vasoconstrictor. 5,910,312, Cl. 424-401.000.

Fried-Nielsen, Martin: *See—*
Arora, Samir; Arora, Gagan; Lakshminarayan, Rajagopal; Brown, Gregory; Fried-Nielsen, Martin; Mok, Clement; and Kleinberg, David, 5,911,145, Cl. 707-514.000.

Friedrichs, Edmund: *See—*
Albert, Guido; Curtze, Jürgen; and Friedrichs, Edmund, 5,910,496, Cl. 514-237.500.

Friemel, Barry: *See—*
Nock, Levin F.; Friemel, Barry; Sutcliffe, Patrick L.; Tirumalai, Arun P.; and Weng, Lee, 5,910,114, Cl. 600-437.000.

Fritz, Michael: *See—*
Walter, Thomas; Fritz, Michael; Harttig, Herbert; Lange, Hans; and Lerch, Rolf, 5,910,246, Cl. 210-232.000.

Frouin, Laurent; and Sari, Mustapha, to Rhone-Poulenc Chimie. Self-leveling fluid mortar including calcium sulfate and lime. 5,910,215, Cl. 106-772.000.

Frucht, Yaacov, to Laser Guard. Intruder detector system. 5,910,767, Cl. 340-557.000.

Fsadni, Mario: *See—*
Strong, H. Andrew; Levy, Julia; Huber, Gustav; and Fsadni, Mario, 5,910,510, Cl. 514-502.000.

Fu, Shou-Kuan: *See—*
Jones, Frank N.; Fu, Shou-Kuan; Jing, Wen; Zhang, Suru; and Swarup, Vijay, 5,910,563, Cl. 528-272.000.

Fuchs, Hans-Bernd: *See—*
Gerresheim, Manfred; Fuchs, Hans-Bernd; and Steinbrecht, Ulrich, 5,909,752, Cl. 141-38.000.

Fuerstenau, Maurice C.; and Zhong, Kangnian, to University and Community College System of Nevada, The Board of Regents of the. Removal of metal ions from aqueous solution. 5,910,253, Cl. 210-682.000.

Fugmann, Winfried, to Leitz-Brown & Sharpe Messtechnik GmbH. High accuracy coordinate measuring machine having a plurality of length-adjustable legs. 5,909,939, Cl. 33-503.000.

Fuji Latex Co., Ltd.: *See—*
Tanaka, Yasuyuki; Nakade, Shinichi; Ochi, Atsuko; Sakaki, Toshiaki; Hayashi, Masaharu; Sekiguchi, Kazuhiro; Kuga, Akihito; and Kanamaru, Eiji, 5,910,567, Cl. 528-491.000.

Fuji Machine Mfg. Co., Ltd.: *See—*
Kawada, Tousuke, 5,911,001, Cl. 382-141.000.

Fuji Photo Film Co., Ltd.: *See—*
Funamoto, Kenji; and Ito, Kenji, 5,911,006, Cl. 382-232.000.
Kobayashi, Takashi; and Nomura, Tatsuya, 5,910,359, Cl. 428-327.000.
Matsumoto, Nobuo; and Tanaka, Tadashi, 5,911,091, Cl. 396-615.000.
Ohkubo, Takeshi; and Shimura, Kazuo, 5,910,972, Cl. 378-54.000.
Yamada, Masahiko, 5,911,014, Cl. 382-308.000.

Fuji Photo Optical Co., Ltd.: *See—*
Takahashi, Kenichi; and Nagata, Kouichi, 5,910,859, Cl. 359-554.000.

Fuji Seiko Limited: *See—*
Shiga, Kiyotaka; Fukui, Akio; Terada, Kazuaki; Yamada, Takahiro; Toyoda, Haruyasu; Miyake, Masashi; and Umeda, Akihiro, 5,909,985, Cl. 408-1.00R.

Fuji Xerox Co., Ltd.: *See—*
Matsumura, Yasuo; Serizawa, Manabu; Suwabe, Masaaki; Sato, Shuji; Kadokura, Yasuo; Morijiri, Hisao; Shoji, Takeshi; and Mizoguchi, Takahiro, 5,910,389, Cl. 430-111.000.

Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences: *See—*
Shen, Hong Yuan; Zeng, Rui Rong; Zhou, Yu Ping; Yu, Gui Fang; Huang, Cheng Hui; Zeng, Zheng Dong; Lin, Wen Xiong; and Wu, Rui Fen, 5,910,140, Cl. 606-3.000.

Fujibayashi, Kentaro; and Murakami, Kunihiko, to Fanuc, Ltd. CNC acceleration-deceleration control apparatus and method. 5,911,125, Cl. 702-141.000.

Fujihara, Kaoru; and Kuji, Motohiro, to Tokyo Electron Limited. Electrical inspecting apparatus with ventilation system. 5,910,727, Cl. 324-158.100.

Fujii, Akio; Enari, Masahiko; and Satake, Yoshifumi, to Canon Kabushiki Kaisha. Digital video signal recording apparatus using variable-length coding. 5,911,033, Cl. 386-109.000.

Fujii, Katsumasa: *See—*
Hsu, Sheng Teng; Fujii, Katsumasa; Kawazoe, Hidechika; and Lee, Jong Jan, 5,910,673, Cl. 257-355.000.

Fujii, Mototsugu: *See—*
Tochio, Tatsuya; Tada, Osamu; Oguma, Toshio; Morimoto, Kazunobu; and Fujii, Mototsugu, 5,911,061, Cl. 395-500.440.

Fujii, Takeo: *See—*
Horiguchi, Yoko; Narita, Kaoru; and Fujii, Takeo, 5,910,675, Cl. 257-370.000.

Fujikawa, Kazuhide, to Sony Corporation. Process for manufacturing a solid-state pick-up device. 5,910,013, Cl. 438-57.000.

Fujimori, Motoyuki: *See—*
Yajima, Akitaka; Fujimori, Motoyuki; Furuhata, Mutsuya; Ushiyama, Tomiyoshi; Koide, Terunaga; Hashizume, Toshiaki; Miyashita, Kiyoshi; Harima, Hiroshi; and Naito, Keijiro, 5,909,944, Cl. 353-81.000.

Fujimori, Naoji: *See—*
Itozaki, Hideo; Harada, Keizo; Fujimori, Naoji; Yazu, Shuji; and Jodai, Tetsuji, 5,910,662, Cl. 257-33.000.

Fujimori, Takayasu: *See—*
Miura, Mitsuo; Kondo, Osamu; Fujimori, Takayasu; and Isahaya, Yoshinori, 5,910,562, Cl. 528-201.000.

Fujimoto, Takuya, to Cat Eye Co., Ltd. Attaching equipment for detachably engaging a string-type object. 5,909,851, Cl. 24-196.000.

Fujino, Akihiko: *See—*
Miyazawa, Masayuki; Fujino, Akihiko; and Ueda, Sadanobu, 5,911,086, Cl. 396-96.000.

Fujioka, Hajime: *See—*
Kondo, Toshiro; Araki, Yutaka; Fujioka, Hajime; and Oko, Makiko, 5,910,391, Cl. 430-204.000.

Fujisawa, Hiroki: *See—*
Sekiguchi, Tomonori; Fujisawa, Hiroki; Sakata, Takeshi; Kawahara, Takayuki; and Kimura, Katsutaka, 5,910,911, Cl. 365-145.000.

Fujisawa, Masayasu: *See—*
Hira, Yasuo; Toba, Tamaki; Imayama, Hirotaka; Ohkawa, Atsuko; Fujisawa, Masayasu; Nate, Kazuo; Sonobe, Hideki; Suzuki, Saburo; Togawa, Eisei; Ishizaki, Hiroshi; and Hagiwara, Yoshiki, 5,910,864, Cl. 360-103.000.

Fujita, Makoto; and Amo, Yoshikazu. Refrigerating apparatus. 5,910,161, Cl. 62-211.000.

Fujitsu Kasei Limited: *See—*
Adachi, Katsura; Usui, Makoto; Nishii, Kota; Muraya, Takashi; Kobayashi, Toshihiro; Tamura, Kazuyuki; and Sato, Junichi, 5,909,819, Cl. 220-623.000.

Fujitsu Limited: *See—*
Adachi, Katsura; Usui, Makoto; Nishii, Kota; Muraya, Takashi; Kobayashi, Toshihiro; Tamura, Kazuyuki; and Sato, Junichi, 5,909,819, Cl. 220-623.000.
Akaogi, Takao; Ogawa, Yasushige; Kajita, Tatsuya; Watanabe, Hisayoshi; and Yamashita, Minoru, 5,910,916, Cl. 365-185.290.
Arai, Soichiro; Miyazawa, Kenichi; Yabara, Hidefumi; Yasuda, Hiroshi; and Nakatani, Takayuki, 5,910,658, Cl. 250-492.220.
Fukuda, Hiroyuki; Nakanishi, Takashi; and Hirose, Mitsuru, 5,910,257, Cl. 216-93.000.
Ishii, Yuichiro, 5,910,116, Cl. 600-443.000.
Mishiro, Hidehiro; Tsubone, Kenichiro; Abe, Mitsunori; and Takada, Rie, 5,910,755, Cl. 333-24.00C.
Mizuma, Keiji; and Kobayashi, Izumi, 5,910,952, Cl. 370-395.000.
Naito, Takao, 5,911,016, Cl. 385-3.000.
Nishimura, Takashi; Sekiya, Naohide; Kimura, Takeshi; Inoue, Hideki; Nagano, Hiroshi; and Taoka, Ikuo, 5,910,955, Cl. 370-401.000.
Nozaki, Koji; Yano, Ei; Watanabe, Keiji; Namiki, Takahisa; and Igarashi, Miwa, 5,910,392, Cl. 430-270.100.
Ogasawara, Hajime; and Kaneko, Yoshihiro, 5,910,980, Cl. 379-142.000.
Ogawa, Yoshinori; Sasaki, Yuji; Yoshida, Mitsuaki; Shikano, Kazunori; and Ishikawa, Masato, 5,910,862, Cl. 360-97.010.
Taki, Nobuhiro, 5,911,062, Cl. 395-551.000.

Fujitsu VLSI Limited: *See—*

Akaogi, Takao; Ogawa, Yasushige; Kajita, Tatsuya; Watanabe, Hisayoshi; and Yamashita, Minoru, 5,910,916, Cl. 365-185.290.
Fujiwara, Shiomi. Menstruation recording device. 5,909,900, Cl. 283-115.000.
Fujiwara, Tamio: *See*—
Sugimoto, Hirohiko; and Fujiwara, Tamio, 5,910,506, Cl. 514-397.000.
Fujiwara, Yukio: *See*—
Kobayashi, Kei-Ichiro; Kato, Tomoaki; Takada, Yoshio; Wada, Osamu; Kobayashi, Masahiro; Furuse, Naomi; Fujiwara, Yukio; Shichimiya, Shoichi; and Ishibe, Shinji, 5,910,761, Cl. 338-21.000.
Fujiyama, Michihiro: *See*—
Sakaguchi, Hiroshi; Nishiyama, Takao; Hashimoto, Seiji; and Fujiyama, Michihiro, 5,911,029, Cl. 386-46.000.
Fukasawa, Shigenori; Isono, Masahiro; Kawakami, Kazuhisa; Mochizuki, Seiji; Takahashi, Nobuhito; and Kobayashi, Atsushi, to Seiko Epson Corporation. Pump unit including pump frame, pump wheel and pulley and method for using the pump unit to squeeze a tube for sucking ink from a nozzle opening in a recording head. 5,910,808, Cl. 347-30.000.
Fuke, Mitsuo; Umehara, Takashi; Kawabata, Katsunori; and Horinishi, Katsumi, to West Electric Company, Ltd. Variable emission angle strobe light and control method therefor. 5,911,085, Cl. 396-62.000.
Fukuda, Hiroyuki; Nakanishi, Takashi; and Hirose, Mitsuru, to Fujitsu Limited. Process for producing a semiconductor device using purified phosphoric acid. 5,910,257, Cl. 216-93.000.
Fukuda, Masayuki: *See*—
Ishikawa, Toshifumi; Okada, Shinichiro; Fukuda, Masayuki; and Tomita, Hiroshi, 5,910,356, Cl. 428-215.000.
Fukuda, Michiko N., to La Jolla Cancer Research Foundation. Trophinin and trophinin-assisting proteins. 5,910,451, Cl. 436-501.000.
Fukuda, Takeshi: *See*—
Yamasaki, Nakamichi; Mochida, Tsuneaki; Maeda, Akihiro; Fukuda, Takeshi; and Morimura, Tsuyoshi, 5,910,298, Cl. 423-592.000.
Fukui, Akio: *See*—
Shiga, Kiyotaka; Fukui, Akio; Terada, Kazuaki; Yamada, Takahiro; Toyoda, Haruyasu; Miyake, Masashi; and Umeda, Akihiro, 5,909,985, Cl. 408-1.00R.
Fukuma, Yasufumi: *See*—
Ikezawa, Yukio; Yanagi, Eiichi; Fukuma, Yasufumi; and Kato, Takeyuki, 5,910,836, Cl. 356-124.000.
Fukuta, Masakazu: *See*—
Habuchi, Osami; and Fukuta, Masakazu, 5,910,581, Cl. 536-23.200.
Fukuzumi, Tomoya, to Mitsubishi Denki Kabushiki Kaisha. Multi-chip IC memory device with a single command controller and signal clock generator. 5,910,917, Cl. 365-185.330.
Fuller, Charles E.: *See*—
Jain, Ramesh; Horowitz, Bradley; Fuller, Charles E.; Gupta, Amarnath; Bach, Jeffrey R.; and Shu, Chiao-fe, 5,911,139, Cl. 707-3.000.
Fulton, James A.: *See*—
Stumberg, L. Herbert; and Fulton, James A., 5,910,771, Cl. 340-573.100.
Funamoto, Kenji; and Ito, Kenji, to Fuji Photo Film Co., Ltd. Method and apparatus for controlling a quantity of codes representative of image data. 5,911,006, Cl. 382-232.000.
Funase, Masasuke: *See*—
Yamaguchi, Takuji; and Funase, Masasuke, 5,909,853, Cl. 242-348.100.
Funk, James L. Logging tractor accessory. 5,909,870, Cl. 254-325.000.
Furlani, Edward P.: *See*—
Ghosh, Syamal K.; Furlani, Edward P.; and Chatterjee, Dilip K., 5,910,856, Cl. 359-291.000.
Fürstenau, Norbert, to Deutsche Forschungsanstalt fur Luft-und Raumfahrt e.V. Apparatus and method for interferometric measurements. 5,910,840, Cl. 356-351.000.
Furuhata, Mutsuya: *See*—
Yajima, Akitaka; Fujimori, Motoyuki; Furuhata, Mutsuya; Ushiyama, Tomiyoshi; Koide, Terunaga; Hashizume, Toshiaki; Miyashita, Kiyoshi; Harima, Hiroshi; and Naito, Keijiro, 5,909,944, Cl. 353-81.000.
Furuse, Naomi: *See*—
Kobayashi, Kei-Ichiro; Kato, Tomoaki; Takada, Yoshio; Wada, Osamu; Kobayashi, Masahiro; Furuse, Naomi; Fujiwara, Yukio; Shichimiya, Shoichi; and Ishibe, Shinji, 5,910,761, Cl. 338-21.000.
Furuse, Yoshinobu, to Honda Giken Kogyo Kabushiki Kaisha. Combined processing apparatus. 5,909,908, Cl. 29-33.00T.
Fusion Lighting, Inc.: *See*—
Simpson, James E., 5,910,710, Cl. 315-248.000.
Fussman, Arie. Device for dilating a puncture hole in a body and for guiding the insertion of an elongated member into the body. 5,910,134, Cl. 604-164.000.
Futamura, Yoshisumi, to Toyota Jidosha Kabushiki Kaisha. Mobile unit radio communications system. 5,910,947, Cl. 370-332.000.
G & G Intellectual Properties, Inc.: *See*—
Gearin, Peter; and Leech, Everett A., 5,909,816, Cl. 211-85.800.
G.D. Searle & Co.: *See*—
Zhi, Benxin; and Newaz, Murad, 5,910,597, Cl. 548-377.100.
Gabant, Philippe: *See*—
Bernard, Philippe; and Gabant, Philippe, 5,910,438, Cl. 435-252.300.
Gagne, Daniel Paul; and Lyman, Charles Douglas, to Heidelberger Druckmaschinen AG. High-speed printing system having multiple slipping nips. 5,909,707, Cl. 101-148.000.
Gailus, David W.: *See*—
Brooks, Jeffrey B.; Spehrley, Charles W., Jr.; Barss, Steven H.; Moynihan, Edward R.; Hine, Nathan P.; and Gailus, David W., 5,910,810, Cl. 347-88.000.
Gaitan, Michael: *See*—
Johnson, Ralph Barry; Gaitan, Michael; and Chung, Ronald C. L., 5,910,659, Cl. 250-495.100.
Galbraith, Stephen L.: *See*—
Stamos, Theodore C.; Galbraith, Stephen L.; and Honzelka, Thomas P., 5,910,244, Cl. 210-138.000.
Galella, Rodney. Carpet removal tool. 5,909,868, Cl. 254-211.000.
Galey, Jean-Baptiste, to L'Oreal. Substituted benzyl derivatives of polyalkylene polyamines and their use in cosmetic and pharmaceutical compositions. 5,910,513, Cl. 514-649.000.
Galimberti, Maurizio: *See*—
Resconi, Luigi; Galimberti, Maurizio; Piemontesi, Fabrizio; Guglielmi, Floriano; and Albizzati, Enrico, 5,910,464, Cl. 502-111.000.
Gallenstein, Victor J.: *See*—
Throneburg, James L.; McLelland, James G.; Gallenstein, Victor J.; Kelley, Leon E.; and Richie, Douglas H., 5,909,719, Cl. 12-142.00R.
Gallini S.r.l.: *See*—
Paolo, Avaltroni; and Gianfranco, Casula, 5,910,121, Cl. 600-562.000.
Gammack, Richard J.: *See*—
Claydon, Anthony Peter J.; MacFarlane, Charles D.; Gammack, Richard J.; Jones, Anthony Mark; Robbins, William P.; and Barnes, Mark, 5,910,960, Cl. 371-37.110.
Gang, Fongyan: *See*—
Molvig, Kim; Chen, Hudong; Teixeira, Christopher M.; Remondi, Stephen; Hill, David Lawrence; Gang, Fongyan; Alajbegovic, Ales; and Hoch, James E., Jr., 5,910,902, Cl. 364-578.000.
Gani, Mary Susan Jean; Wirth, Hans-Jurgen; Aguilar, Marie Isabel; Hearn, Milton Thomas William; Vanselow, Donald George; Cheang, Philip Hong Ning; and Eriksson, Kjell-Ove. Zirconia particles. 5,910,462, Cl. 501-80.000.
Gao, Feng: *See*—
Barker, Jeremy; Gao, Feng; and Stux, Arnie, 5,910,381, Cl. 429-197.000.
Garcia, Guillermo: *See*—
Gerlier, André; Polidoro, Roberto; and Garcia, Guillermo, 5,909,792, Cl. 194-206.000.
Gardner, James P.: *See*—
Li, Minyu; Gardner, James P.; Kluge, John E.; and Mitra, Sumita B., 5,910,395, Cl. 430-302.000.
Gardner, Sylvia Alice; Shaw-Klein, Lori Jeanne; and Brady, Brian Kenneth, to Eastman Kodak Company. Electrically conductive composition and elements containing solubilized polyaniline complex. 5,910,385, Cl. 430-62.000.
Garey, Caroline Elizabeth; and Leushner, James, to Visible Genetics, Inc. Method and kit for amplification, sequencing and typing of classical HLA class I genes. 5,910,413, Cl. 435-6.000.
Garito, A. F.; Shi, Rui-Fang; Koeppen, Chris; and Chen, Weidong, to University of Pennsylvania, The Trustees of the. Method for the preparation of optical fibers. 5,911,025, Cl. 385-127.000.
Garmin Corporation: *See*—
Burrell, Gary L., 5,910,882, Cl. 361-681.000.
Garner, Robert Keith, Jr.: *See*—
Skalla, Randy Marc; Ahrens, Carl Austin; Garner, Robert Keith, Jr.; and Wilkinson, Bradley Carl, 5,910,291, Cl. 422-171.000.
Garoutte, Dana Lee: *See*—
Bhagat, Promod Kumar; and Garoutte, Dana Lee, 5,910,981, Cl. 379-219.000.
Garrison, Arthur L.; Smigla, Terrence R.; and Stephens, Scott A., to TRW Inc. Method and apparatus for synchronizing communications in a satellite based telecommunications system. 5,910,945, Cl. 370-324.000.
Garson, Jean-Claude: *See*—
Ramin, Roland; and Garson, Jean-Claude, 5,910,313, Cl. 424-401.000.
Garza, Jose Arturo; Kent, Dales Morrison; Ramirez, Ciro Neal; and Sinha, Rajeev Ranjan, to International Business Machines Corporation. Heatsink retention and air duct assembly. 5,910,884, Cl. 361-690.000.
Gasca, Jean-Philippe; Arpin, Michel; Malgrange, Denis; and Caurant, Daniel, to Vetrotex France. Glass fibers for reinforcing organic materials, and composites obtained thereby. 5,910,461, Cl. 501-35.000.
Gass, Dale L.: *See*—
Hansen, James E.; Bauer, Michael E.; Gass, Dale L.; and Janutka, William J., 5,910,890, Cl. 363-41.000.
Gateway 2000, Inc: *See*—
Moore, Robert, 5,910,933, Cl. 369-33.000.
Gausepohl, Hermann: *See*—
McKee, Graham Edmund; Moors, Rainer; Gausepohl, Hermann; and Seibring, Joachim, 5,910,553, Cl. 526-319.000.
Gaynes, Michael A.; and Molla, Jaynal A., to International Business Machines Corporation. Selectively filled adhesives for compliant, reworkable, and solder-free flip chip interconnection and encapsulation. 5,910,641, Cl. 174-52.400.
Gealy, F. Daniel: *See*—
DeBoer, Scott Jeffrey; Gealy, F. Daniel; and Thakur, Randhir P. S., 5,910,880, Cl. 361-311.000.
Gearin, Peter; and Leech, Everett A., to G & G Intellectual Properties, Inc. Adjustable vehicle-carrying frame. 5,909,816, Cl. 211-85.800.
Gebhardt, Heiko: *See*—
Iossel, Yuri; Kazarov, Grigory; Koski, Veijo; Poliakov, Alexey; and Gebhardt, Heiko, 5,910,236, Cl. 204-280.000.
GEC Alsthom Cyril Bath: See—
Ford, Jesse Carl; and Polen, Larry Alexander, 5,910,183, Cl. 72-21.500.
Gec Alsthom T & D SA: *See*—

Marmonier, Jean; and Penning, Jean-François, 5,910,872, Cl. 361-2.000.
Geco A.S.: *See*—
Vigen, Erik, 5,910,789, Cl. 342-357.000.
Geib, Lawrence E.; Krishnaswamy, Chandrasekaran; and Meyer, Gregory Paul, to Molex Incorporated. Electrical connector with cable strain relief. 5,910,026, Cl. 439-471.000.
Geibel, Stephen A.: *See*—
Koehler, Paul C.; Geibel, Stephen A.; Whitlock, Michael B.; Hashemi, Reza; and Malbrel, Christophe A., 5,909,773, Cl. 166-277.000.
Geisendörfer, Matthias: *See*—
Aichinger, Heinrich; Geisendörfer, Matthias; Herbst, Holger; and Nestler, Gerhard, 5,910,603, Cl. 560-205.000.
Geisler, Edwin. Shopping cart scanning system. 5,910,769, Cl. 340-568.500.
Geissler, Alfred: *See*—
Hoppe, Gerd; Geissler, Alfred; and Schäfer, Karl-Heinz, 5,909,988, Cl. 409-198.000.
Gelfand, Erwin W.; and Johnson, Gary L., to National Jewish Center for Immunology and Respiratory Medicine. Regulation of cytokine production in a hematopoietic cell. 5,910,417, Cl. 435-7.200.
Gelman, Irwin H., to Mount Sinai School Of Medicine. Tumor suppressor gene. 5,910,442, Cl. 435-325.000.
Gemfire Corporation: *See*—
Bischel, William K.; Brinkman, Michael J.; Deacon, David A.G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,911,018, Cl. 385-16.000.
Gemplus: *See*—
Naccache, David, 5,910,989, Cl. 380-25.000.
Genentech, Inc.: *See*—
Presta, Leonard G.; Shelton, David L.; and Urfer, Roman, 5,910,574, Cl. 530-388.220.
General Electric Company: *See*—
Castonguay, Roger N.; and Smith, James I., 5,910,650, Cl. 200-400.000.
Jenkins, Thomas Edward; and Jubenville, Duane, 5,909,937, Cl. 312-405.100.
Kazirskis, Benedict; and Grycko, Lawrence M., 5,910,258, Cl. 219-60.00R.
Kelly, Thomas J., 5,910,376, Cl. 428-558.000.
Larsen, Einar; and Delmerico, Robert, 5,910,889, Cl. 363-40.000.
Lyons, James Patrick; Vlatkovic, Vlatko; Espelage, Paul Martin; and Esser, Albert Andreas Maria, 5,910,892, Cl. 363-98.000.
Nerone, Louis R., 5,910,708, Cl. 315-209.00R.
Rigby, Kenneth Wayne, 5,910,115, Cl. 600-443.000.
Stevanovic, Ljubisa Dragoljub; Steigerwald, Robert Louis; and Kheraluwala, Mustansir Hussainy, 5,910,709, Cl. 315-225.000.
General Hospital Corporation, The: *See*—
Haupert, Garner T., Jr., 5,910,484, Cl. 514-25.000.
Szostak, Jack W.; Cuenoud, Bernard; and Huizenga, David E., 5,910,408, Cl. 435-6.000.
General Motors Corporation: *See*—
Foster, Michael Ralph; Vaneman, Gerald Leroy; Heather, Jesse Allan; Serrels, Dana Michael; and Chen, David Kwo-Shyong, 5,909,916, Cl. 29-890.000.
Hemingway, Mark David; and Pamphilis, Nicholas Alexander, 5,910,293, Cl. 423-213.700.
Jordan, Lawrence Benard, Jr.; and Uzkan, Teoman, 5,910,099, Cl. 60-599.000.
Kowalewski, Thomas Joseph; Karl, Matthew John; Grzanka, Thomas; Milne, Robert; Fischer, Eric Michael; and Suratkal, Vasanth, 5,909,918, Cl. 292-199.000.
Meiller, Thomas Charles; Beadnell, Timothy Michael; and Covert, Charles Henry, 5,910,637, Cl. 96-135.000.
Gennery, Brian Albert, to Darwin Discovery Limited. Use of levobupivacaine in paediatric surgery. 5,910,502, Cl. 514-330.000.
Gentz, Reiner L.: *See*—
Ni, Jian; Gentz, Reiner L.; Su, Jeffrey Y.; and Li, Haodong, 5,910,431, Cl. 435-69.500.
Genzyme Corporation: *See*—
Yew, Nelson S.; Cheng, Seng H.; Eastman, Simon J.; Marshall, John; Scheule, Ronald K.; Harris, David J.; Lee, Edward R.; and Siegel, Craig S., 5,910,487, Cl. 514-44.000.
George, Donald C.; and Upton, Dean T. Pill dispenser employing a sealed pill carrier. 5,909,822, Cl. 221-25.000.
George, Eric S.: *See*—
Vukelic, Gregg A.; and George, Eric S., 5,910,034, Cl. 441-70.000.
Geotech Crane Controls, Inc.: *See*—
Wallace, Walter J., Jr.; and Wallace, Mark A., 5,909,817, Cl. 212-275.000.
Gerasimov, Alexander N.: *See*—
Wegman, Paul M.; Vaynshteyn, Mikhail; Abramov, Oleg Y.; Ryabov, Sergei D.; Yudin, Yuri A.; Kashkarov, Alexander G.; Gerasimov, Alexander N.; and Kouzmitchev, Victor A., 5,909,829, Cl. 222-232.000.
Gerber Garment Technology, Inc.: *See*—
Gerber, Heinz Joseph, 5,910,260, Cl. 219-121.670.
Gerber, Heinz Joseph, to Gerber Garment Technology, Inc. Laser cutter and method for cutting sheet material. 5,910,260, Cl. 219-121.670.
Gerber Systems Corporation: *See*—
Ryvkin, Mark, 5,910,651, Cl. 235-462.250.
Gerhard, Volker: *See*—
Schmidt, Helmut; Mennig, Martin; Jonschker, Gerhard; and Gerhard, Volker, 5,910,522, Cl. 523-168.000.
Gerich, Horst. Compact fluid mixer. 5,909,959, Cl. 366-339.000.
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Chaconas, Peter Constantine, 5,910,197, Cl. 81-124.600.

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Hickey, Thomas B.; and Haschart, Robert J., 5,910,805, Cl. 345-467.000.

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Roslund, Richard N., Jr., 5,909,924, Cl. 297-300.400.

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Shimodaira, Kenichi; Hayashi, Junichi; and Ito, Michio, 5,910,007, Cl. 433-17.000.

Hayashi, Masaharu: *See—*
Tanaka, Yasuyuki; Nakade, Shinichi; Ochi, Atsuko; Sakaki, Toshiaki; Hayashi, Masaharu; Sekiguchi, Kazuhiro; Kuga, Akihito; and Kanamaru, Eiji, 5,910,567, Cl. 528-491.000.

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Hayden, Dwayne E. Brake light system for helmets. 5,910,764, Cl. 340-479.000.

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Haynes, Tony E.: *See—*
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HCT Shaping Systems SA: See—
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Healthline Laboratories, Inc.: *See—*
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Hearn, Milton Thomas William: See—

Gani, Mary Susan Jean; Wirth, Hans-Jurgen; Aguilar, Marie Isabel; Hearn, Milton Thomas William; Vanselow, Donald George; Cheang, Philip Hong Ning; and Eriksson, Kjell-Ove, 5,910,462, Cl. 501-80.000.

Heather, Jesse Allan: *See—*

Foster, Michael Ralph; Vaneman, Gerald Leroy; Heather, Jesse Allan; Serrels, Dana Michael; and Chen, David Kwo-Shyong, 5,909,916, Cl. 29-890.000.

Heidelberger Druckmaschinen AG: *See—*

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Moulton, Roger D.; and Hellums, Mark W., 5,910,237, Cl. 204-541.000.

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Henne, Andreas: *See—*

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Lehmann, Peter; and Grisoni, Jacques, 5,909,730, Cl. 126-343.50A.

Henry, Félix, to Canon Kabushiki Kaisha. Multidimensional close neighbor search. 5,911,011, Cl. 382-253.000.

Henry, George F.; and Birrell, James S., to Precor Incorporated. Weighted hand-controller for remote control of exercise apparatus. 5,910,070, Cl. 482-4.000.

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Baur, Kenneth C.; Scholz, Kathleen M.; Whary, William L.; and Henry, Rand, 5,909,989, Cl. 410-44.000.

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Herter, Patricia D.: *See—*

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Herz, William S.; and Graham, Jon E., to S3, Incorporated. Correction of flicker associated with noninterlaced-to-interlaced video conversion. 5,910,820, Cl. 348-446.000.

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Lichtenwalter, Kay; and Ward, Calvin B., 5,910,410, Cl. 435-6.000.

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Baur, Kenneth C.; Scholz, Kathleen M.; Whary, William L.; and Henry, Rand, 5,909,989, Cl. 410-44.000.

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Hirano, Yasuaki, to Sharp Kabushiki Kaisha. Data writing circuit for a nonvolatile semiconductor memory. 5,910,918, Cl. 365-189.010.

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Hirosawa, Masao: *See—*

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Hirota, Akira: See—

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Nishizawa, Hirotaka; Miura, Tomoyoshi; Anjou, Ichirou; Ishihara, Masamichi; Yamamura, Masahiro; Morita, Sadao; Araki, Takashi; Inoue, Kiyoshi; Sugano, Toshio; Kohara, Tetsuji; Yamada, Toshio; Sekine, Yasushi; Anata, Yoshiaki; Goto, Masakatsu; Kasai, Norihiko; Takeura, Shinobu; Tsukuda, Mutsuo; Yamaguchi, Yasunori; Sawada, Jiro; Iwai, Hidetoshi; Tsukui, Seiichiro; Kaji, Tadao; and Shiozawa, Noboru, 5,910,010, Cl. 438-15.000.
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Sekiguchi, Tomonori; Fujisawa, Hiroki; Sakata, Takeshi; Kawahara, Takayuki; and Kimura, Katsutaka, 5,910,911, Cl. 365-145.000.
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Tanaka, Hitoshi; Aoki, Masakazu; and Itoh, Kiyoo, 5,910,924, Cl. 365-226.000.
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Mizutani, Hikaru, 5,910,941, Cl. 369-291.000.
Hitachi Metals, Ltd.: *See*—
Kurosawa, Hisao; Mitsumata, Chiharu; Kobayashi, Toshio; and Noguchi, Shin, 5,910,868, Cl. 360-113.000.
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Hitachi Techno Engineering Co., Ltd.: *See*—
Takahashi, Kenichi; Matsuno, Hiroyuki; Obata, Hiroyasu; and Kawai, Megumi, 5,910,001, Cl. 418-1.000.
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Nishizawa, Hirotaka; Miura, Tomoyoshi; Anjou, Ichirou; Ishihara, Masamichi; Yamamura, Masahiro; Morita, Sadao; Araki, Takashi; Inoue, Kiyoshi; Sugano, Toshio; Kohara, Tetsuji; Yamada, Toshio; Sekine, Yasushi; Anata, Yoshiaki; Goto, Masakatsu; Kasai, Norihiko; Takeura, Shinobu; Tsukuda, Mutsuo; Yamaguchi, Yasunori; Sawada, Jiro; Iwai, Hidetoshi; Tsukui, Seiichiro; Kaji, Tadao; and Shiozawa, Noboru, 5,910,010, Cl. 438-15.000.
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Szu, Kou-I; Chang, Kuo-Jung; Lih, Shyh-Shiuh; and Hsu, Wu-Chang, 5,909,965, Cl. 384-43.000.
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Ho, Chi-Sheng. Stethoscope with an indexing detent. 5,910,992, Cl. 381-67.000.
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Hobson, Gerald R. Method for in mold trimming. 5,910,283, Cl. 264-536.000.
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Hoekman, Leendert Cornelis: *See*—
Boumera, Jean-Marc; Bourrel, Maurice; Chabagno, Jean-Michel; Gijsen, Hendrikus Johannes Cornelis; and Hoekman, Leendert Cornelis, 5,910,360, Cl. 428-341.000.
Hoffmann-La Roche Inc.: *See*—
Foricher, Joseph; and Schmid, Rudolf, 5,910,606, Cl. 562-495.000.
Hoffmeyer, Mark K.: *See*—
Goodman, Dale E.; Hoffmeyer, Mark K.; and Krabbenhoft, Roger S., 5,910,644, Cl. 174-260.000.
Hofmann, Jürgen: *See*—
Güntherberg, Norbert; Hofmann, Jürgen; Ohlig, Hilmar; Mailahn, Elmar; Bus, Klaus; Czauderna, Bernhard; and Grabowski, Sven, 5,910,276, Cl. 264-101.000.
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Holdsworth, Steven E., to Barsplice Products, Inc. Tubular coupler for concrete reinforcing bars. 5,909,980, Cl. 403-362.000.
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Beall, George H.; Holland, Hans J.; and Kohli, Jeffrey T., 5,910,459, Cl. 501-8.000.
Hollander, Milton Bernard; McKinley, William Earl; and Stewart, Russell, to Omega Engineering, Inc. Antenna-effect suppressor method and device particularly for thermocouples and other dissimilar metal conductor combinations. 5,910,030, Cl. 439-620.000.
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Köster, Claus; Holle, Armin; and Franzen, Jochen, 5,910,656, Cl. 250-287.000.
Holler, Barbara J.: *See*—
Moineau, Sylvain; Holler, Barbara J.; Vandenbergh, Peter A.; Vedamuthu, Ebenezer R.; and Kondo, Jeffrey K., 5,910,571, Cl. 530-350.000.
Hollkamp, Joseph W.: *See*—
Henderson, Douglas A.; Gordon, Robert W.; Hollkamp, Joseph W.; and Agnes, Gregory S., 5,911,158, Cl. 73-583.000.
Holtan, Timothy P.: *See*—
Senior, Richard C.; Smalley, Christopher G.; and Holtan, Timothy P., 5,910,240, Cl. 208-113.000.
Holzinger, Michael: *See*—
Maier, Joachim; Sitte, Werner; and Holzinger, Michael, 5,910,239, Cl. 205-781.000.
Homa, Fred L.: *See*—
Elhammer, Ake P.; and Homa, Fred L., 5,910,570, Cl. 530-328.000.
Homan, Dale A.: *See*—
Short, Michael L.; Bornhorst, John B.; Daniel, Eward A.; and Homan, Dale A., 5,909,705, Cl. 100-214.000.
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McHugh, Robert G.; Ho, Yu-Ming; and Wu, Ming-Chuan, 5,910,023, Cl. 439-41.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Furuse, Yoshinobu, 5,909,908, Cl. 29-33.00T.
Gotoh, Shinichiro, 5,909,949, Cl. 362-37.000.
Iida, Tetsuo; Shimada, Kenzo; and Maeda, Joji, 5,910,091, Cl. 56-16.700.
Honeywell, Inc.: *See*—
Class, Kim A., 5,910,788, Cl. 342-357.000.
Honma, Ichiro: *See*—
Watanabe, Hirohito; and Honma, Ichiro, 5,910,019, Cl. 438-488.000.
Honma, Kengo: *See*—
Yamasaki, Isamu; Tomita, Ichio; Honma, Kengo; and Takahashi, Sinichi, 5,909,849, Cl. 239-700.000.
Honnick, William D.: *See*—
Bossert, Emily C.; Cannon, Kevin; Honnick, William D.; and Ranbom, Wayne, 5,910,373, Cl. 428-457.000.
Honzelka, Thomas P.: *See*—
Stamos, Theodore C.; Galbraith, Stephen L.; and Honzelka, Thomas P., 5,910,244, Cl. 210-138.000.
Hooftman, Gert: *See*—
Audenaert, Frans A.; Allewaert, Kathy E.M.L.A.; Hooftman, Gert; Nagase, Makoto; and Lens, Hugo R., 5,910,557, Cl. 528-70.000.

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Lane, John E.; Hoory, Dan; and Choe, Johnny, 5,910,994, Cl. 381-93.000.
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Vaidyanathan, Sriam; Kanuit, Christopher; Kocecski, Slavko; and Shastry, Sushil, 5,909,866, Cl. 248-429.000.
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Horne, Remko: *See—*
Dings, Jacobus M.; Horne, Remko; and Van Veen, Gerardus N. A., 5,910,396, Cl. 430-323.000.
Horowitz, Bradley: *See—*
Jain, Ramesh; Horowitz, Bradley; Fuller, Charles E.; Gupta, Amarnath; Bach, Jeffrey R.; and Shu, Chiao-fe, 5,911,139, Cl. 707-3.000.
Hosaka, Hirochika: *See—*
Sakakura, Yasuyuki; Yamagishi, Masahiko; and Hosaka, Hirochika, 5,910,607, Cl. 562-532.000.
Hoshi, Kimihiro: *See—*
Shinohe, Takashi; Yamaguchi, Masakazu; and Hoshi, Kimihiro, 5,910,738, Cl. 327-108.000.
Hoshino, Tetsuo; Muranishi, Hiroya; Taketomi, Shigehisa; and Iwasa, Susumu, to Takeda Chemical Industries, Ltd. Osteogenic promoting pharmaceutical composition. 5,910,492, Cl. 514-114.000.
Hoshizaki America, Inc.: *See—*
Snelling, Jeff; and Borg, Russel Axel, Jr., 5,910,164, Cl. 62-344.000.
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Kummer, Frederick J.; Zuckerman, Joseph D.; Toggwiler, Herve Jean; and Aubertot, Laurent Marie, 5,910,171, Cl. 623-18.000.
Hotomi, Hideo: *See—*
Ueda, Takamasa; Natsuhara, Toshiya; Asano, Masaki; and Hotomi, Hideo, 5,910,211, Cl. 106-31.430.
Hotra, Zenon: *See—*
Siedlik, Henry Anthony; Hotra, Zenon; and Gniewek, Michael Jerome, 5,910,029, Cl. 439-522.000.
Hotta, Ikuya; Ushio, Masaru; Sato, Junji; and Kitahara, Yoshinao, to Konica Corporation. Image forming apparatus. 5,911,092, Cl. 399-21.000.
Hottinger Baldwin Messtechnik GmbH: *See—*
Gerlach, Hans-Joachim; Will, Heinz Ronald; Waegner, Ralf; and Schlachter, Werner, 5,910,645, Cl. 177-1.000.
Houchin, Martin Richard: *See—*
Harris, Harold Robert; Aral, Halil; Bruckard, Warren John; Freeman, David Edward; Houchin, Martin Richard; McDonald, Kenneth Joun; Sparrow, Graham Jeffrey; and Grey, Ian Edward, 5,910,621, Cl. 75-399.000.
Houde, Michel: *See—*
Corriveau, Michel; and Houde, Michel, 5,911,122, Cl. 455-432.000.
Hougen, Everett D. Portable, personal breathing apparatus. 5,910,071, Cl. 482-13.000.
Howarth, Leslie George: *See—*
Griffin, Mary Catherine Ambrose; Howarth, Leslie George; and Tatum, John Philip, 5,910,372, Cl. 428-429.000.
Hryhorenko, Socrates: *See—*
Aslam, Muhammed; and Hryhorenko, Socrates, 5,909,810, Cl. 206-576.000.
Hshieh, Fwu-Iuan: *See—*
Chang, Mike F.; Hshieh, Fwu-Iuan; Kwan, Sze-Hon; and Owyang, King, 5,910,669, Cl. 257-339.000.
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Hsu, Louis Lu-Chen; Hsieh, Chang-Ming; and Ogura, Seiki, 5,910,912, Cl. 365-185.010.
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Hu, Yin, to Texas Instruments Incorporated. Increasing uniformity in a refill layer thickness for a semiconductor device. 5,910,017, Cl. 438-404.000.
Huang, Ben. Grip for hollow golf club shafts. 5,910,054, Cl. 473-302.000.
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Shen, Hong Yuan; Zeng, Rui Rong; Zhou, Yu Ping; Yu, Gui Fang; Huang, Cheng Hui; Zeng, Zheng Dong; Lin, Wen Xiong; and Wu, Rui Fen, 5,910,140, Cl. 606-3.000.
Huang, Chiu-Tong. Reversible ratchet screwdriver. 5,910,196, Cl. 81-60.000.
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Small, Parker A., Jr.; and Huang, Shih-Wen, 5,910,421, Cl. 435-19.000.
Huang, Tsai-Hsiu. Film article release machine. 5,909,800, Cl. 198-803.400.
Huber, Gustav: *See—*
Strong, H. Andrew; Levy, Julia; Huber, Gustav; and Fsadni, Mario, 5,910,510, Cl. 514-502.000.
Hudson, Steven David. Polyolefin nanocomposites. 5,910,523, Cl. 523-213.000.
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Hughes Electronics Corporation: *See—*
Lee, Benjamin M., 5,909,860, Cl. 244-173.000.
Yang, Chao-Kung, 5,910,819, Cl. 348-387.000.
Hugick, James: *See—*
Muscarella, Patrick; Quinter, Gary A.; Toland, David R.; and Hugick, James, 5,910,201, Cl. 82-129.000.
Huh, Seong Chul: *See—*
Kim, Jong Gun; Huh, Seong Chul; and Kwon, Ki Ryong, 5,910,715, Cl. 318-254.000.
Hui, Joseph. Pool alarm. 5,910,772, Cl. 340-573.600.
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Szostak, Jack W.; Cuenoud, Bernard; and Huizenga, David E., 5,910,408, Cl. 435-6.000.
Human Genome Sciences, Inc.: *See—*
Ni, Jian; Gentz, Reiner L.; Su, Jeffrey Y.; and Li, Haodong, 5,910,431, Cl. 435-69.500.
Hungarian Academy of Sciences, The Biological Research Ctr. of the: *See—*
Hadlaczky, Gyula; and Szalay, Aladar A., 5,910,429, Cl. 435-69.100.
Hunter, James F. Gun trigger safety device. 5,910,002, Cl. 42-70.070.
Hunziker, Patrick. Display of heart motion. 5,910,111, Cl. 600-407.000.
Husky Injection Molding Systems: *See—*
Schad, Robert Dietrich; and Romanski, Zbig, 5,910,327, Cl. 425-572.000.
Hutchinson, Douglas K., to Pharmacia & Upjohn. Hetero-aromatic ring substituted phenyloxazolidinone antimicrobials. 5,910,504, Cl. 514-376.000.
Hutchison, Alan: *See—*
Blum, Charles; and Hutchison, Alan, 5,910,590, Cl. 544-345.000.
Hvidegaard, Johannes, to Pedershaab A/S. System for moulding tubular goods. 5,910,325, Cl. 425-456.000.
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Ko, Young Hoon; Kim, Jae Yun; and Hwang, Jin Man, 5,910,566, Cl. 528-480.000.
Hyal Pharmaceutical Corporation: *See—*
Falk, Rudolf Edgar; and Asculai, Samuel Simon, 5,910,489, Cl. 514-54.000.
Hyde, Zara; and Lewis, Vincent E., to Nalco/Exxon Energy Chemicals, L.P. Method for inhibiting polymer formation in styrene processing. 5,910,232, Cl. 203-9.000.
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Hyundai Motor Company: *See—*
Cho, Won-bong, 5,910,194, Cl. 74-500.500.
Iarocci, John J.: *See—*
Williams, Russell T.; Jacklin, Kelly B.; Robbin, Jeffrey L.; and Iarocci, John J., 5,911,065, Cl. 395-677.000.
Ibico AG: *See—*
Weiffenbach, Wolfgang; and Leute, Kurt, 5,910,263, Cl. 219-221.000.
Ichimoto, Kazuhiro; Nakayama, Osamu; Kishimoto, Mitsuru; Iida, Kazumasa; Tamura, Hiroki; Miyamoto, Katsuhiko; and Ando, Hiromitsu, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Apparatus and a method for controlling the ignition timing of a cylinder-injection internal combustion engine. 5,909,723, Cl. 123-406.000.
ICI Americas Inc: *See—*
Katsura, Naomi; Takeuchi, Hikaru; and Watanabe, Yuka, 5,910,370, Cl. 428-425.500.
ID Technologies, Inc.: *See—*
Black, Donald, 5,910,776, Cl. 340-825.350.
Ideal Ideas, Inc.: *See—*
Fried, Karen G., 5,910,312, Cl. 424-401.000.
Ido, Yoichi: *See—*
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IEG Technologies Corp.: *See—*
Bernhardt, Bruno; Langley, William G.; Klingel, Eric J.; Mueller, James G.; and Lakhwala, Fayaz, 5,910,245, Cl. 210-170.000.
Ierfino, Nick; and Zakaib, Larry, to Harris Corporation. Adaptive predistortion using over-the-hop feedback. 5,910,965, Cl. 375-220.000.
IEX Corporation: *See—*
Castonguay, Ronald M.; and Crockett, Gary B., 5,911,134, Cl. 705-9.000.
Igarashi, Miwa: *See—*
Nozaki, Koji; Yano, Ei; Watanabe, Keiji; Namiki, Takahisa; and Igarashi, Miwa, 5,910,392, Cl. 430-270.100.
Iguchi, Yasuhiro: *See—*
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Ihara, Toshiyuki, to Adavantest Corporation. Electron beam exposure apparatus for scanning electron microscopy. 5,910,657, Cl. 250-310.000.
Ii, Masazumi: *See—*

Yanai, Yuichi; Hirai, Takayuki; Oba, Masayoshi; Ikeda, Kiyoshi; Takagi, Yasushi; Ishikawa, Takeo; Harada, Kazuhiko; Iida, Hirotaka; Arakawa, Kazuhiko; Ii, Masazumi; and Nakamura, Yuzo, 5,910,279, Cl. 264-282.000.

Iida, Hirotaka: *See*—
Yanai, Yuichi; Hirai, Takayuki; Oba, Masayoshi; Ikeda, Kiyoshi; Takagi, Yasushi; Ishikawa, Takeo; Harada, Kazuhiko; Iida, Hirotaka; Arakawa, Kazuhiko; Ii, Masazumi; and Nakamura, Yuzo, 5,910,279, Cl. 264-282.000.

Iida, Kazumasa: *See*—
Ichimoto, Kazuhiro; Nakayama, Osamu; Kishimoto, Mitsuru; Iida, Kazumasa; Tamura, Hiroki; Miyamoto, Katsuhiko; and Ando, Hiromitsu, 5,909,723, Cl. 123-406.000.

Iida, Tetsuo; Shimada, Kenzo; and Maeda, Joji, to Honda Giken Kogyo Kabushiki Kaisha. Electric lawn mower. 5,910,091, Cl. 56-16.700.

Iijima, Hiroshi, to Kabushiki Kaisha TOPCON. Ophthalmic instrument. 5,910,833, Cl. 351-208.000.

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Iinuma, Syunzi, to Kabushiki Kaisha Toshiba. Optimization binarizing circuit. 5,910,850, Cl. 358-461.000.

Ikeda, Kenichi: *See*—
Hachisuka, Hisao; Kondo, Yoshihiko; Ikeda, Kenichi; Takano, Hitoshi; and Mochizuki, Amane, 5,910,357, Cl. 428-315.500.

Ikeda, Kiyoshi: *See*—
Yanai, Yuichi; Hirai, Takayuki; Oba, Masayoshi; Ikeda, Kiyoshi; Takagi, Yasushi; Ishikawa, Takeo; Harada, Kazuhiko; Iida, Hirotaka; Arakawa, Kazuhiko; Ii, Masazumi; and Nakamura, Yuzo, 5,910,279, Cl. 264-282.000.

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Ikezawa, Yukio; Yanagi, Eiichi; Fukuma, Yasufumi; and Kato, Takeyuki, to Kabushiki Kaisha Topcon. Lens meter. 5,910,836, Cl. 356-124.000.

Ikuta, Kunio, to Dainippon Screen Mfg. Co., Ltd. Method and apparatus for binary coding of image data including adding error accumulated for a target pixel and a pixel in the vicinity to be later coded. 5,911,009, Cl. 382-237.000.

Iliff, Edwin C., to First Opinion Corporation. Computerized medical diagnostic and treatment advice method. 5,910,107, Cl. 600-300.000.

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Shkolnikov, Yury; and Deieso, Tony, 5,909,836, Cl. 227-8.000.

Ilzig, Frank; Buberl, Ernst; and Link, Achim, to Mannesmann Sachs AG. Hub body for clutches, especially friction clutches in motor vehicles. 5,909,789, Cl. 192-115.000.

Imada, Michihiro: *See*—
Nishimura, Hirofumi; Watanabe, Tomomi; Taga, Junichi; and Imada, Michihiro, 5,909,724, Cl. 123-436.000.

Imai, Akihiro: *See*—
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Imayama, Hirotaka: *See*—
Hira, Yasuo; Toba, Tamaki; Imayama, Hirotaka; Ohkawa, Atsuko; Fujisawa, Masayasu; Nate, Kazuo; Sonobe, Hideki; Suzuki, Saburo; Togawa, Eisei; Ishizaki, Hiroshi; and Hagiwara, Yoshiki, 5,910,864, Cl. 360-103.000.

IMI Norgren Limited: *See*—
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Imler, Charles M.: *See*—
Pearl, Robert A.; Imler, Charles M.; and Lowry, Joe W., 5,909,788, Cl. 192-88.00B.

Immuno AG: *See*—
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Egan, Patrick Kevin; and Smid, Jan Douglas, 5,911,050, Cl. 395-280.000.
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Gaynes, Michael A.; and Molla, Jaynal A., 5,910,641, Cl. 174-52.400.
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Mittendorf, Joachim; Fey, Peter; Junge, Bodo; Kaulen, Johannes; van Laak, Kai; Meier, Heinrich; and Schohe-Loop, Rudolf, 5,910,593, Cl. 546-278.400.

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Mitchell, Alan J.; and Junge, Brent A., 5,910,166, Cl. 62-511.000.

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Meader, Allen L.; and Rittmeyer, Geoffrey E., 5,909,894, Cl. 280-623.000.

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Nakada, Tetsuya; Kubota, Michio; Chaen, Hiroto; and Miyake, Toshio, 5,910,436, Cl. 435-193.000.
Takayama, Kazue; Harashima, Akira; Ohta, Tsunetaka; Izumi, Noboru; Tahata, Hiroyoshi; and Kurimoto, Masashi, 5,910,303, Cl. 424-85.100.

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Kawamoto, Masayuki; Tsuzi, Kimitoshi; and Nakaho, Jun-ichi, 5,910,781, Cl. 340-870.370.
Kawarazaki, Yoshiharu; Nishibe, Yasushi; and Iwata, Hitoshi, 5,910,718, Cl. 318-447.000.

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Iijima, Hiroshi, 5,910,833, Cl. 351-208.000.
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Abe, Yasuhiko; and Kanda, Ryoichi, 5,911,160, Cl. 73-602.000.
Hirayama, Hideaki; and Takahashi, Takeo, 5,911,040, Cl. 395-183.140.
Hirayama, Koichi; Nakai, Masatoshi; and Shimoda, Kenji, 5,911,032, Cl. 386-95.000.
Iinuma, Syunzi, 5,910,850, Cl. 358-461.000.
Kanda, Ryoichi; and Shiki, Eiichi, 5,910,118, Cl. 600-455.000.
Kozono, Hiroyuki, 5,910,681, Cl. 257-666.000.
Kugue, Jun, 5,911,042, Cl. 395-188.010.
Kuriyama, Ryouichi, 5,910,652, Cl. 235-492.000.
Ogawa, Yoshikazu, 5,911,058, Cl. 395-395.000.
Shinohe, Takashi; Yamaguchi, Masakazu; and Hoshi, Kimihiro, 5,910,738, Cl. 327-108.000.
Yui, Hideto, 5,910,998, Cl. 382-101.000.

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Yasui, Hisako; Otsuka, Jun; and Kiyoshima, Junko, 5,910,305, Cl. 424-93.400.

Kaczmarek, Richard T.: *See—*
Paske, Jamie M.; and Kaczmarek, Richard T., 5,910,877, Cl. 361-119.000.

Kadokura, Yasuo: *See—*
Matsumura, Yasuo; Serizawa, Manabu; Suwabe, Masaaki; Sato, Shuji; Kadokura, Yasuo; Morijiri, Hisao; Shoji, Takeshi; and Mizoguchi, Takahiro, 5,910,389, Cl. 430-111.000.

Kafka, Alfred J.: *See—*
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Vogel, Hans Heiner; and Kägi, Hans-Rudolf, 5,909,711, Cl. 105-168.000.

Kainou, Kikuo: *See—*
Suzuki, Kotaro; and Kainou, Kikuo, 5,910,189, Cl. 73-295.000.

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Kajita, Tatsuya: *See—*
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Bates, Darryle E.; and Kalanish, Scott S., 5,909,830, Cl. 222-327.000.

Kalinoski, John P., to Parker-Hannifin Corporation. Corrosion-resistant, form-in-place EMI shielding gasket. 5,910,524, Cl. 523-215.000.

Kallender, Howard: *See—*
Gwynn, Michael N.; and Kallender, Howard, 5,910,414, Cl. 435-6.000.

Kamada, Masashi: *See—*
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Kamienski, Conrad William, deceased (by Diane Buschke Kamienski, executrix): *See—*
Schwindeman, James Anthony; Quirk, Roderic Paul; Kamienski, Conrad William, deceased, 5,910,547, Cl. 525-332.800.

Kamitamari, Tohru: *See—*
Uchida, Hiroki; Kiso, Masayuki; Nakamura, Takayuki; Kamitamari, Tohru; Susuki, Rumiko; and Shimizu, Koichiro, 5,910,340, Cl. 427-437.000.

Kamterter II, LLC: *See—*
Eastin, John Alvin, 5,910,050, Cl. 47-58.000.

Kanamaru, Eiji: *See—*
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Kancianic, Eugene M.: *See—*
Goel, Anurag; Kancianic, Eugene M.; and Peinado, Fermin D., 5,910,979, Cl. 379-120.000.

Kanda, Ryoichi; and Shiki, Eiichi, to Kabushiki Kaisha Toshiba. Removal of clutter components in ultrasound color-doppler imaging. 5,910,118, Cl. 600-455.000.

Kanda, Ryoichi: *See—*
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Ueda, Kazuhiko; Kotani, Jun; Yano, Ayako; and Hirose, Toshifumi, 5,910,555, Cl. 528-34.000.

Kaneko, Yoshihiro: *See—*
Ogasawara, Hajime; and Kaneko, Yoshihiro, 5,910,980, Cl. 379-142.000.

Kanel, Jeffrey Scott: *See—*
Guelcher, Scott Arthur; and Kanel, Jeffrey Scott, 5,910,254, Cl. 210-703.000.

Kanemori, Yuzuru: *See—*
Shimada, Takayuki; Kanemori, Yuzuru; Katayama, Mikio; Tanaka, Shinya; and Kubo, Masumi, 5,910,829, Cl. 349-110.000.

Kang, Hongling, to UT Automotive Dearborn, Inc. Reduced noise commutator system. 5,910,696, Cl. 310-236.000.

Kang, Hyoung-Won, to Samsung Aerospace Industries, Ltd. Camera finder system. 5,911,087, Cl. 396-378.000.

Kang, Tzong-Kuei; Cheng, Huang-Chung; Shih, Chun-Hsing; and Peng, Chun-Hung, to Winbond Electronics Corporation. Method for reducing antenna effect during plasma etching procedure for semiconductor device fabrication. 5,910,452, Cl. 438-710.000.

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Kanuit, Christopher: *See*—
Vaidyanathan, Sriam; Kanuit, Christopher; Kocecski, Slavko; and Shastry, Sushil, 5,909,866, Cl. 248-429.000.

Kao Corporation: *See*—
Tanaka, Yasuyuki; Nakade, Shinichi; Ochi, Atsuko; Sakaki, Toshiaki; Hayashi, Masaharu; Sekiguchi, Kazuhiro; Kuga, Akihito; and Kanamaru, Eiji, 5,910,567, Cl. 528-491.000.

Kapec, Jeffrey: *See*—
Swain, Paul; Kapec, Jeffrey; Tanaka, Kazuna; Gong, Feng; Brown, Geoffrey John; Ouellette, Gerry; and Tennant, William M., Jr., 5,910,105, Cl. 600-131.000.
Tanaka, Kazuna; Kapec, Jeffrey; and Naoi, Yukiko, 5,909,759, Cl. 16-112.000.

Karl, Matthew John: *See*—
Kowalewski, Thomas Joseph; Karl, Matthew John; Grzanka, Thomas; Milne, Robert; Fischer, Eric Michael; and Suratkal, Vasanth, 5,909,918, Cl. 292-199.000.

Kasai, Norihiko: *See*—
Nishizawa, Hirotaka; Miura, Tomoyoshi; Anjou, Ichirou; Ishihara, Masamichi; Yamamura, Masahiro; Morita, Sadao; Araki, Takashi; Inoue, Kiyoshi; Sugano, Toshio; Kohara, Tetsuji; Yamada, Toshio; Sekine, Yasushi; Anata, Yoshiaki; Goto, Masakatsu; Kasai, Norihiko; Takeura, Shinobu; Tsukuda, Mutsuo; Yamaguchi, Yasunori; Sawada, Jiro; Iwai, Hidetoshi; Tsukui, Seiichiro; Kaji, Tadao; and Shiozawa, Noboru, 5,910,010, Cl. 438-15.000.

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Wegman, Paul M.; Vaynshteyn, Mikhail; Abramov, Oleg Y.; Ryabov, Sergei D.; Yudin, Yuri A.; Kashkarov, Alexander G.; Gerasimov, Alexander N.; and Kouzmitchev, Victor A., 5,909,829, Cl. 222-232.000.

Kasprzak, Kenneth A.: *See*—
Halloran, Daniel Joseph; Kasprzak, Kenneth A.; and Herter, Patricia D., 5,910,302, Cl. 424-70.122.

Kataoka, Kazunori: *See*—
Kato, Masao; Kataoka, Kazunori; Nagasaki, Yukio; and Takezawa, Tsutomu, 5,910,485, Cl. 514-34.000.

Kataria, Ram L.: *See*—
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Katayama, Akira: See—
Adachi, Chihaya; Sasaki, Masaomi; Nagai, Kazukiyo; Shimada, Tomoyuki; Tanaka, Chiaki; Tamoto, Nozomu; Katayama, Akira; Anzai, Mitsutoshi; Imai, Akihiro; and Morooka, Katsuhiro, 5,910,561, Cl. 528-196.000.

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Shimada, Takayuki; Kanemori, Yuzuru; Katayama, Mikio; Tanaka, Shinya; and Kubo, Masumi, 5,910,829, Cl. 349-110.000.

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Kato, Toshihide: *See*—
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Kato, Yoichi: *See*—
Mikayama, Toshifumi; Tomura, Takafumi; Watarai, Hiroshi; Kuroki, Ryota; Kato, Yoichi; Ishizaka, Kimishige; and Nakano, Tatsumi, 5,910,427, Cl. 435-69.100.

Kats, Vyacheslav D.; and Gordon, Arnold S., to Circuits and Systems, Inc. Electronic weighing apparatus utilizing surface acoustic waves. 5,910,647, Cl. 177-210.0FP.

Katsura, Naomi; Takeuchi, Hikaru; and Watanabe, Yuka, to ICI Americas Inc. Polymeric film. 5,910,370, Cl. 428-425.500.

Katz, Howard: *See*—
Fontenot, Mark G.; Feinberg, Richard; and Katz, Howard, 5,910,816, Cl. 348-65.000.

Kaulen, Johannes: *See*—
Mittendorf, Joachim; Fey, Peter; Junge, Bodo; Kaulen, Johannes; van *Laak, Kai; Meier, Heinrich; and Schohe-Loop, Rudolf, 5,910,593,* Cl. 546-278.400.

Kawabata, Hiroyuki: *See*—
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Kawabata, Katsunori: *See*—
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Kawada, Tousuke, to Fuji Machine Mfg. Co., Ltd. Image processing apparatus. 5,911,001, Cl. 382-141.000.

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Kawaguchi, Gou: *See*—
Ozawa, Osamu; Kawazura, Tetsuji; Kuroda, Noriaki; Aoyagi, Yoshihiro; Watanabe, Jiro; and Kawaguchi, Gou, 5,910,544, Cl. 525-178.000.

Kawahara, Masataka: *See*—
Yoshinaga, Kazuo; Nishida, Shunichiro; Kawahara, Masataka; Hiraoka, Keiko; Kushibiki, Nobuo; Kobayashi, Hideki; Takeuchi, Kikuko; and Masatomi, Toru, 5,910,386, Cl. 430-66.000.

Kawahara, Takayuki: *See*—
Sekiguchi, Tomonori; Fujisawa, Hiroki; Sakata, Takeshi; Kawahara, Takayuki; and Kimura, Katsutaka, 5,910,911, Cl. 365-145.000.

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Kawakami, Kazuhisa: *See*—
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Kawazura, Tetsuji: *See*—
Ozawa, Osamu; Kawazura, Tetsuji; Kuroda, Noriaki; Aoyagi, Yoshihiro; Watanabe, Jiro; and Kawaguchi, Gou, 5,910,544, Cl. 525-178.000.

Kazarov, Grigory: *See*—
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Moineau, Sylvain; Holler, Barbara J.; Vandenbergh, Peter A.; Vedamuthu, Ebenezer R.; and Kondo, Jeffrey K., 5,910,571, Cl. 530-350.000.

Kondo, Katsumi: *See—*
Obe, Masahito; Kondo, Katsumi; Ota, Masuyuki; and Ohara, Shuichi, 5,910,271, Cl. 252-299.010.

Kondo, Keiji: *See—*
Kajiwara, Susumu; Misawa, Norihiko; and Kondo, Keiji, 5,910,433, Cl. 435-148.000.

Kondo, Osamu: *See—*
Miura, Mitsuo; Kondo, Osamu; Fujimori, Takayasu; and Isahaya, Yoshinori, 5,910,562, Cl. 528-201.000.

Kondo, Reishi: *See—*
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Kondo, Toshiro; Araki, Yutaka; Fujioka, Hajime; and Ono, Makiko, to Mitsubishi Paper Mills Limited. Process for making lithographic printing plate with water wash containing mercapto compound. 5,910,391, Cl. 430-204.000.

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Hachisuka, Hisao; Kondo, Yoshihiko; Ikeda, Kenichi; Takano, Hitoshi; and Mochizuki, Amane, 5,910,357, Cl. 428-315.500.

Konica Corporation: See—
Hotta, Tsuyoshi; Ushio, Masaru; Sato, Junji; and Kitahara, Yoshinao, 5,911,092, Cl. 399-21.000.

Kopp, Clinton; Johnson, Warren; Day, Anthony; MacCormick, Antony; Markiewicz, Tomasz; Stoffery, Gary; Thompson, Mark; Alexander, Brett; and Wende, Neil, to CRC for Waste Management and Pollution Control Limited. Method and apparatus for recovering water from a sewer main. 5,910,249, Cl. 210-617.000.

Korea Kumbo Petrochemical Co., Ltd.: See—
Ko, Young Hoon; Kim, Jae Yun; and Hwang, Jin Man, 5,910,566, Cl. 528-480.000.

Korea Telecom: See—
Jang, Dae-Young, 5,910,990, Cl. 381-1.000.
Kim, Kun-Suk; Han, Tae-Man; and Cho, Pyung-Dong, 5,911,047, Cl. 395-200.520.

Koremoto, Takahiro: *See—*
Minami, Masami; Yoshimatsu, Takao; Iwamatsu, Hiroki; and Koremoto, Takahiro, 5,910,470, Cl. 508-468.000.

Korolenko, Kyrill V., to United States of America, Navy. Retractable underwater turret. 5,911,172, Cl. 89-5.000.

Korson, Albert. Hose support with telescoping tube. 5,909,861, Cl. 248-80.000.

Kosaka, Yasuo: *See—*
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Koscielniak, Waclaw C.: See—
Razook, Reda R.; Egan, Kulwant S.; Yindeepol, Wiparwan; and Koscielniak, Waclaw C., 5,911,109, Cl. 438-424.000.

Koski, Veijo: *See—*
Iossel, Yuri; Kazarov, Grigory; Koski, Veijo; Poliakov, Alexey; and Gebhardt, Heiko, 5,910,236, Cl. 204-280.000.

Köster, Claus; Holle, Armin; and Franzen, Jochen, to Bruker Daltonik GmbH. Adjustment of the sample support in time-of-flight mass spectrometers. 5,910,656, Cl. 250-287.000.

Kotani, Jun: See—
Ueda, Kazuhiko; Kotani, Jun; Yano, Ayako; and Hirose, Toshifumi, 5,910,555, Cl. 528-34.000.

Koto, Haruhiko: *See—*
Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,910,809, Cl. 347-72.000.

Kotoh, Hirotoshi, to Ricoh Company, Ltd. Braille forming apparatus for forming wide patterns and lines. 5,909,972, Cl. 400-109.100.

Kourepenis, Anthony S.: *See—*
Ward, Paul A.; Hildebrant, Eric M.; Niles, Lance C.; Weinberg, Marc S.; and Kourepenis, Anthony S., 5,911,156, Cl. 73-504.160.

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Wegman, Paul M.; Vaynshteyn, Mikhail; Abramov, Oleg Y.; Ryabov, Sergei D.; Yudin, Yuri A.; Kashkarov, Alexander G.; Gerasimov, Alexander N.; and Kouzmitchev, Victor A., 5,909,829, Cl. 222-232.000.

Kowalewski, Thomas Joseph; Kuhl, Matthew John; Grzanka, Thomas; Milne, Robert; Fischer, Eric Michael; and Suratkal, Vasanth, to General Motors Corporation. Valet block out for deck lid latch. 5,909,918, Cl. 292-199.000.

Koyama, Tadashi: *See—*
Tsunetomo, Keiji; and Koyama, Tadashi, 5,910,256, Cl. 216-24.000.

Kozono, Hiroyuki, to Kabushiki Kaisha Toshiba. Resin sealed semiconductor device. 5,910,681, Cl. 257-666.000.

Krabbenhoft, Roger S.: See—
Goodman, Dale E.; Hoffmeyer, Mark K.; and Krabbenhoft, Roger S., 5,910,644, Cl. 174-260.000.

Kraft, Kurt R.; Vieth, Gary L.; and Louden, Peter J., to Boeing Company, The. Aircraft labyrinth fire seal. 5,910,094, Cl. 60-39.091.

Krajnovich, Douglas J.: *See—*
Gornicki, Stella Zofia; and Krajnovich, Douglas J., 5,910,235, Cl. 204-192.320.

Krämer, Stephan: *See—*
Koeppe, Günter; Rosenthal, Dieter; and Krämer, Stephan, 5,910,184, Cl. 72-201.000.

Krauss, Christian; Najork, Rolf; Wollny, Thomas; and Flintrop, Thomas, to Ford Global Technologies, Inc. Countershaft automatic gearbox, in particular an automatic gearbox for motor vehicles. 5,910,068, Cl. 477-109.000.

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Ghosal, Kanchan; and Krishnan, Venkataram, 5,910,533, Cl. 524-560.000.

Krishnaswamy, Chandrasekaran: See—
Geib, Lawrence E.; Krishnaswamy, Chandrasekaran; and Meyer, Gregory Paul, 5,910,026, Cl. 439-471.000.

Kropp, Jörg-R.: *See—*
Plickert, Volker; and Kropp, Jörg-R., 5,911,022, Cl. 385-49.000.

Kruse, Lawrence I.: *See—*
Broedel, Sheldon E.; and Kruse, Lawrence I., 5,910,509, Cl. 514-456.000.

Kratzsch, Bernd: See—
Boegner, Walter; Hasik, Karl-Ernst; Kratzsch, Bernd; Verreist, Wim; Voigtlaender, Dirk; Wenninger, Gaenter; and Wirbeleit, Friedrich, 5,910,097, Cl. 60-278.000.

Kubo, Masumi: *See—*
Shimada, Takayuki; Kanemori, Yuzuru; Katayama, Mikio; Tanaka, Shinya; and Kubo, Masumi, 5,910,829, Cl. 349-110.000.

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Nakada, Tetsuya; Kubota, Michio; Chaen, Hiroto; and Miyake, Toshio, 5,910,436, Cl. 435-193.000.

Kuga, Akihito: *See—*
Tanaka, Yasuyuki; Nakade, Shinichi; Ochi, Atsuko; Sakaki, Toshiaki; Hayashi, Masaharu; Sekiguchi, Kazuhiro; Kuga, Akihito; and Kanamaru, Eiji, 5,910,567, Cl. 528-491.000.

Kugue, Jun, to Kabushiki Kaisha Toshiba. Computer system having expansion unit. 5,911,042, Cl. 395-188.010.

Kuhn, Brent A.: *See—*
Wayt, Roger W.; and Kuhn, Brent A., 5,910,027, Cl. 439-489.000.

Kuhn, Helmut; Doerffer, Walter; Loew, Gerhard; and Ciolek, Bernhard, to Siemens Aktiengesellschaft. Method for operating an x-ray tube. 5,910,974, Cl. 378-138.000.

Kujawski, Kenneth W.: *See—*
Ziemer, Lance W.; and Kujawski, Kenneth W., 5,910,195, Cl. 74-603.000.

Kuji, Motohiro: *See—*
Fujihara, Kaoru; and Kuji, Motohiro, 5,910,727, Cl. 324-158.100.

Kulshreshtha, Alok K.: *See—*
Ali, Yusuf; Bhatia, Rajkumar; and Kulshreshtha, Alok K., 5,909,745, Cl. 134-42.000.

Kume, Hitoshi: *See—*
Kato, Masataka; Adachi, Tetsuo; Tanaka, Toshihiro; Sasaki, Toshio; Kume, Hitoshi; and Kimura, Katsutaka, 5,910,913, Cl. 365-185.110.

Kummet, Frederick J.; Zuckerman, Joseph D.; Toggweiler, Werve Jean; and Aubertot, Laurent Marie, to Hospital for Joint Diseases. Components for a modular shoulder and hip prosthesis. 5,910,171, Cl. 623-18.000.

Kunkel, George M. Air vent panels for electromagnetic shielding. 5,910,639, Cl. 174-35.0MS.

Kuo, Huei-Pei; and Baldwin, Richard R., to Hewlett-Packard Company. High voltage spacer for a flat panel display with specific cross section. 5,910,703, Cl. 313-482.000.

Kuo, Youti. Dentifrice dispensing toothbrush with refillable cartridge. 5,909,977, Cl. 401-146.000.

Kuramoto, Akio: *See—*

Ohmuro, Norihiko; Kuramoto, Akio; and Tanabe, Kosuke, 5,910,790, Cl. 343-895.000.

Kuramoto, Yasuhiro: *See*—
Yazaki, Akira; Yoshida, Jiro; Niino, Yoshiko; Ohshita, Yoshihiro; Hayashi, Norihiro; Amano, Hirotaka; Hirao, Yuzo; and Kuramoto, Yasuhiro, 5,910,498, Cl. 514-255.000.

Kuratani, Junichi, to Alps Electric Co., Ltd. Depression activated switch. 5,909,804, Cl. 200-516.000.

Kuree Co., Ltd.: *See*—
Satoh, Toshio; Ebata, Tetsuo; and Kosaka, Yasuo, 5,910,499, Cl. 514-255.000.

Kurimoto, Masashi: *See*—
Takayama, Kazue; Harashima, Akira; Ohta, Tsunetaka; Izumi, Noboru; Tahata, Hiroyoshi; and Kurimoto, Masashi, 5,910,303, Cl. 424-85.100.

Kuriyama, Ryouichi, to Kabushiki Kaisha Toshiba. Portable terminal apparatus for an IC card for supplying a power source voltage in a predetermined timing. 5,910,652, Cl. 235-492.000.

Kuroda, Hideaki, to Sony Corporation. Semiconductor device having various threshold voltages and manufacturing same. 5,910,671, Cl. 257-344.000.

Kuroda, Kazuyoshi: *See*—
Yamasaki, Yasuhiro; Kuroda, Kazuyoshi; and Takaki, Kenji, 5,910,384, Cl. 430-58.000.

Kuroda, Noriaki: *See*—
Ozawa, Osamu; Kawazura, Tetsuji; Kuroda, Noriaki; Aoyagi, Yoshihiro; Watanabe, Jiro; and Kawaguchi, Gou, 5,910,544, Cl. 525-178.000.

Kuroki, Ryota: *See*—
Mikayama, Toshifumi; Tomura, Takafumi; Watarai, Hiroshi; Kuroki, Ryota; Kato, Yoichi; Ishizaka, Kimishige; and Nakano, Tatsumi, 5,910,427, Cl. 435-69.100.

Kuroki, Tadashi, to Tochigi Fuji Sangyo Kabushiki Kaisha. Differential apparatus. 5,910,064, Cl. 475-199.000.

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Kurotsu, Satoru, to Oki Electric Industry Co., Ltd. Multiple-bit comparator with reliable output timing and reduced hazards. 5,910,762, Cl. 340-146.200.

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Kushibiki, Nobuo: *See*—
Yoshinaga, Kazuo; Nishida, Shunichiro; Kawahara, Masataka; Hiraoka, Keiko; Kushibiki, Nobuo; Kobayashi, Hideki; Takeuchi, Kikuko; and Masatomi, Toru, 5,910,386, Cl. 430-66.000.

Kushner, Philip Marshall: *See*—
Bach, Erik; Mikkelsen, Kaj Svejstrup; Michaelsen, Carsten Peter; and Kushner, Philip Marshall, 5,910,037, Cl. 446-108.000.

Kuslak, John Steven, to Unisys Corporation. Programmable processor execution rate controller. 5,911,083, Cl. 395-800.410.

Kusunoki, Hideki: *See*—
Kobayashi, Hideki; and Kusunoki, Hideki, 5,909,726, Cl. 123-520.000.

Kuwata, Shigeru: *See*—
Masuta, Chikara; Uehara, Kyoko; Tanaka, Hideo; and Kuwata, Shigeru, 5,910,444, Cl. 435-419.000.

Kuzmak, Lubomyr I. Non-slipping gastric band. 5,910,149, Cl. 606-157.000.

Kwak, Wie-jong; Han, Chang-kyun; Kim, Hwan-su; An, Jae-suk; and Kim, Taek-soo, to Sunkyong Industries, Ltd. Process of extracting and purifying biologically effective ingredients from combined medicinal plants and their extract composition. 5,910,307, Cl. 424-195.100.

Kwan, Katherine W.; and Voois, Paul A. Video signal decoding arrangement and method for improved error concealment. 5,910,827, Cl. 348-845.100.

Kwan, Shing S.: *See*—
Modrovich, Ivan E.; Kwan, Shing S.; and Wortham, Leon C., 5,910,422, Cl. 435-22.000.

Kwan, Sze-Hon: *See*—
Chang, Mike F.; Hshieh, Fwu-Iuan; Kwan, Sze-Hon; and Owyang, King, 5,910,669, Cl. 257-339.000.

Kwang-Woo: *See*—
Oh, Il-Mook, 5,909,754, Cl. 15-29.000.

Kwon, Ki Ryong: *See*—
Kim, Jong Gun; Huh, Seong Chul; and Kwon, Ki Ryong, 5,910,715, Cl. 318-254.000.

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Kyoto Daiichi Kagaku Co., Ltd.: *See*—
Naka, Michio, 5,910,663, Cl. 257-81.000.

La Jolla Cancer Research Foundation: *See*—
Fukuda, Michiko N., 5,910,451, Cl. 436-501.000.

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Mikayama, Toshifumi; Tomura, Takafumi; Watarai, Hiroshi; Kuroki, Ryota; Kato, Yoichi; Ishizaka, Kimishige; and Nakano, Tatsumi, 5,910,427, Cl. 435-69.100.

Lacomb, Lloyd J., Jr.: *See*—
Piwonka-Corle, Timothy R.; Chen, Xing; Lacomb, Lloyd J., Jr.; Stehle, Jean-Louis; and Zahorski, Dorian, 5,910,842, Cl. 356-369.000.

LaCroix, Barry. Pressure relief valve. 5,909,748, Cl. 137-527.000.

Lafferty, William Michael: *See*—
Slemon, Charles S.; Lafferty, William Michael; and Guest, Clark C., 5,910,765, Cl. 340-517.000.

LaFlamme, David W: *See*—
Perry, Terry T.; Bose, Krishnangshu; LaFlamme, David W; and Magyar, Lester J, 5,910,219, Cl. 118-719.000.

Lai, Jung-Hua. Control circuit of a remote controller. 5,910,784, Cl. 341-176.000.

Laine, Peter A.; and Miskell, Robert A. Screw-on electrical wire connector. 5,910,643, Cl. 174-87.000.

Lajoie, M. Stephen; Joseph, Amy L.; Jones, Keith A.; and Winston, Anthony E., to Church & Dwight Co., Inc. Insecticide compositions. 5,910,323, Cl. 424-717.000.

Lakhwala, Fayaz: *See*—
Bernhardt, Bruno; Langley, William G.; Klingel, Eric J.; Mueller, James G.; and Lakhwala, Fayaz, 5,910,245, Cl. 210-170.000.

Lakshminarayan, Rajagopal: *See*—
Arora, Samir; Arora, Gagan; Lakshminarayan, Rajagopal; Brown, Gregory; Fried-Nielsen, Martin; Mok, Clement; and Kleinberg, David, 5,911,145, Cl. 707-514.000.

Lam, Anthony: *See*—
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Lamy, Bernard: *See*—
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Land, Jacob J. Van't: *See*—
Herbermann, Alfred F.; Land, Jacob J. Van't; and Filipiak, Michael A., 5,909,998, Cl. 414-752.000.

Lane, Christopher: *See*—
Blum, Rick; Fairbairn, Kevin; and Lane, Christopher, 5,909,994, Cl. 414-217.000.

Lane, John E.; Hoory, Dan; and Choe, Johnny, to Motorola, Inc. Method and apparatus for suppressing acoustic feedback in an audio system. 5,910,994, Cl. 381-93.000.

Langan, John Giles; and Withers, Howard Paul, Jr., to Air Products and Chemicals, Inc. Abatement of NF_3 with metal oxalates. 5,910,294, Cl. 423-235.000.

Lange, Hans: *See*—
Walter, Thomas; Fritz, Michael; Harttig, Herbert; Lange, Hans; and Lerch, Rolf, 5,910,246, Cl. 210-232.000.

Langendorf, Brian K.: *See*—
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Langley, William G.: *See*—
Bernhardt, Bruno; Langley, William G.; Klingel, Eric J.; Mueller, James G.; and Lakhwala, Fayaz, 5,910,245, Cl. 210-170.000.

Lanza, Thomas J., Jr.: *See*—
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LaRoche Industries, Inc.: *See*—
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Laronge, Thomas M.: *See*—
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Larsen, Eiler, to Rolic AG. System for the detection of protein contamination on an electrode. 5,910,445, Cl. 436-5.000.

Larsen, Einar; and Delmerico, Robert, to General Electric Company. Hybrid active power filter with programmed impedance characteristics. 5,910,889, Cl. 363-40.000.

Larson, Gary Robert: *See*—
Freeman, Michael Bennett; Larson, Gary Robert; Merritt, Richard Foster; Paik, Yi Hyon; Shulman, Jan Edward; Swift, Graham; and Wilczynski, Robert, 5,910,531, Cl. 524-556.000.

Larson, James M.: *See*—
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Larson, Ronald D: *See*—
Faget, Roy R; and Larson, Ronald D, 5,911,056, Cl. 395-309.000.

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Laser Guard: *See*—
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Lassner, Michael: *See*—
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Latham, Keith Roger; and Latham, Vincent Ernest, to Lotus Biochemical Corporation. Iodothyronine polymers. 5,910,569, Cl. 530-324.000.

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Latham, Keith Roger; and Latham, Vincent Ernest, 5,910,569, Cl. 530-324.000.

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Malingowski, Richard P.; Lathrop, Todd M.; Slepian, Robert M.; McKee, Jere L.; Gula, Lance; and Whitaker, Thomas A., 5,910,760, Cl. 335-167.000.

Laurel Bank Machines Co., Ltd.: *See*—
Arikawa, Junichi, 5,909,814, Cl. 209-534.000.

Lautzenhiser, Frans Peter; Isenberg, John Karl; Walsh, James Edward; and Schubring, Adam Wade, to Delco Electronics Corporation. Method of manufacture for a thick film multi-layer circuit. 5,910,334, Cl. 427-96.000.

Lawrence, Christopher G.: *See*—

Jarett, Keith; Williams, Roland E.; Raffel, Michael A.; Nelson, Roderick; Leuca, Ileana A.; Lee, Tony S.; Lawrence, Christopher G.; Kibria, Masud; Glass, David R.; and Bamburak, Michael D., 5,911,120, Cl. 455-417.000.

Lawrence, Paul J.; Ly, Peter U.; and Shockey, David R., to Litmus Concepts, Inc. pH and amine test to diagnosis of vaginal infections. 5,910,447, Cl. 436-111.000.

Le, Nam Thanh: *See*—
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Leahy, Christopher David: *See*—
Elliott, Russell Phillip; Green, Matthew Thomas; Leahy, Christopher David; and Papadimitriou, Eleni, 5,910,472, Cl. 510-124.000.

Leal, Margo Gene. Vacuum dust mop. 5,909,755, Cl. 15-325.000.

Lecomte, Loic; Metge, Serge; and Souyri, Denis, to Societe Nationale Des Poudres Et Exploisfs. Process for the preparation of aliphatic or cycloaliphatic chlorides. 5,910,617, Cl. 570-261.000.

Lection, David Bruce: *See*—
Carpenter, Mark Alan; Lection, David Bruce; and Molander, Mark Edward, 5,910,799, Cl. 345-333.000.

Lee, Benjamin M., to Hughes Electronics Corporation. Deployment sequencer. 5,909,860, Cl. 244-173.000.

Lee, Benson P.: *See*—
Cable, Thomas L.; Petrik, Michael A.; and Lee, Benson P., 5,910,238, Cl. 205-634.000.

Lee, Byeong Gyu, to LG Electronics Inc. Bearing engagement structure for hermetic compressor. 5,909,967, Cl. 384-295.000.

Lee, Edward R.: *See*—
Yew, Nelson S.; Cheng, Seng H.; Eastman, Simon J.; Marshall, John; Scheule, Ronald K.; Harris, David J.; Lee, Edward R.; and Siegel, Craig S., 5,910,487, Cl. 514-44.000.

Lee, Jong Jan: *See*—
Hsu, Sheng Teng; Fujii, Katsumasa; Kawazoe, Hidechika; and Lee, Jong Jan, 5,910,673, Cl. 257-355.000.

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Lee, Kwan-Ho: *See*—
Yang, Sung-Dong; and Lee, Kwan-Ho, 5,911,079, Cl. 395-750.010.

Lee, M. Kathryn: *See*—
Grossman, Matthew J.; Siskin, Michael; Ferrughelli, David T.; Lee, M. Kathryn; and Senius, James D., 5,910,440, Cl. 435-282.000.

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Lee, Moon-yong: *See*—
Park, Young-wook; Lee, Moon-yong; Kim, Kyung-hun; and Park, In-sung, 5,910,218, Cl. 118-719.000.

Lee, Sang Min: *See*—
Lee, Un Seop; Oh, Jae Seog; Tark, Kyoung Sig; Oh, Won Sik; Kim, Hyeong Seok; and Lee, Sang Min, 5,909,749, Cl. 137-857.000.

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Lee, Shin-Chi: *See*—
Lou, Yung-Song; Rou, Ching-Cherng; Chou, Ting; Koh, Chao-Ming; Lee, Shin-Chi; and Chen, Chuen-Nan, 5,910,678, Cl. 257-529.000.

Lee, Tony S.: *See*—
Jarett, Keith; Williams, Roland E.; Raffel, Michael A.; Nelson, Roderick; Leuca, Ileana A.; Lee, Tony S.; Lawrence, Christopher G.; Kibria, Masud; Glass, David R.; and Bamburak, Michael D., 5,911,120, Cl. 455-417.000.

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Lee, Young-Man, to Samsung Electronics Co., Ltd. IC card memory for recording and reproducing audio and/or video data concurrently or separately and a control method thereof. 5,911,031, Cl. 386-77.000.

Leech, Everett A.: *See*—
Gearin, Peter; and Leech, Everett A., 5,909,816, Cl. 211-85.800.

Leff, Aaron N.: *See*—
Leff, Ruth B.; and Leff, Aaron N., 5,910,009, Cl. 434-322.000.

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Purcell, Stephen C.; and Le Gall, Didier J., 5,910,909, Cl. 364-724.190.

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Lehner, Edwin: *See*—
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Fugmann, Winfried, 5,909,939, Cl. 33-503.000.

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Sandøy, Harry; and Solstad, Vidar, 5,909,869, Cl. 254-264.000.

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Gerlier, André; Polidoro, Roberto; and Garcia, Guillermo, 5,909,792, Cl. 194-206.000.

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Riser, Andrew P.; and Mathis, Ronald F., 5,911,020, Cl. 385-33.000.

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DeBoer, Scott Jeffrey; Gealy, F. Daniel; and Thakur, Randhir P. S., *5,910,880, Cl. 361-311.000.*
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Shields, Kevin Timothy; and Goldberg, Jossef, 5,910,800, Cl. 345-336.000.
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Simonyi, Charles, 5,911,072, Cl. 395-701.000.
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Zimmerman, Christopher A.; and Fraley, Christopher L., 5,911,068, Cl. 395-682.000.

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Smith, Allan Michael; and Durnell, Thomas L., 5,911,142, Cl. 707-*101.000.*

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Morrison, Matthew M.; Loveless, Eric A.; Brumfield, David L.; Barker, B. Thomas; Carroll, Catalina J.; Miller, David; and Petit, Dominique, 5,910,141, Cl. 606-61.000.

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Truitt, Lori A.; Corbin, Frank, III; Lobdell, Donn D.; Miller, Douglas P.; Manica, Keith; Eilers, George J.; Johnson, Steven H.; and Leppert, *Lawrence L., 5,910,252, Cl. 210-645.000.*

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Ansfield, Michael, 5,910,446, Cl. 436-21.000.

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Audenaert, Frans A.; Allewaert, Kathy E.M.L.A.; Hooftman, Gert; *Nagase, Makoto; and Lens, Hugo R., 5,910,557, Cl. 528-70.000.*
Christianson, Todd J.; Nguyen, David D.; and Visser, Robert G., 5,910,471, Cl. 51-295.000.
Debe, Mark K.; Larson, James M.; Balsimo, William V.; Steinbach, Andrew J.; and Ziegler, Raymond J., 5,910,378, Cl. 429-42.000.
Frey, Cheryl M.; and Wilson, Bruce B., 5,910,858, Cl. 359-534.000.
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Wollner, Mark R., 5,910,529, Cl. 524-394.000.
Woo, Edward J., 5,910,517, Cl. 522-78.000.

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Atsumi, Tomoyuki; Kato, Tomokazu; Nakamura, Hidenobu; and Asai, Hiroyuki, 5,911,095, Cl. 399-80.000.
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Short, Michael L.; Bornhorst, John B.; Daniel, Eward A.; and Homan, Dale A., 5,909,705, Cl. 100-214.000.

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Kajiwara, Susumu; Misawa, Norihiko; and Kondo, Keiji, 5,910,433, Cl. *435-148.000.*

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Reimels, William J.; and Wenstrom, Richard F., Jr., 5,910,148, Cl. 606-144.000.

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Li, Minyu; Gardner, James P.; Kluge, John E.; and Mitra, Sumita B., *5,910,395, Cl. 430-302.000.*

Mitsubishi Chemical Corp.: *See—*

Sakakura, Yasuyuki; Yamagishi, Masahiko; and Hosaka, Hirochika, 5,910,607, Cl. 562-532.000.

Takahashi, Hideki, 5,910,540, Cl. 525-92.00B.

Urata, Hisao; Itagaki, Hiroaki; Takahashi, Eitaro; Wada, Yasuhiro; Tanaka, Yoshiyuki; and Ogino, Yasukazu, 5,910,600, Cl. 558-162.000.

Urata, Hisao; Aoshima, Takayuki; Oshiki, Toshiyuki; Takahara, Jun; Iwade, Shinji; Nanba, Yoshiaki; Araki, Yoshitaka; Nakamura, Hirofumi; *and Okano, Takeshi, 5,910,619, Cl. 585-513.000.*

Mitsubishi Denki Kabushiki Kaisha: *See—*

Fukuzumi, Tomoya, 5,910,917, Cl. 365-185.330.

Hamamoto, Takeshi; and Tsukude, Masaki, 5,910,927, Cl. 365-230.030.

Hanai, Masaaki, 5,910,823, Cl. 348-630.000.

Harada, Naofumi; Kizawa, Satoshi; Tadano, Yuji; and Kawata, Kaoru, 5,910,750, Cl. 327-544.000.

Hashizume, Takeshi; and Sakashita, Kazuhiro, 5,911,039, Cl. 395-183.060.

Hatakenaka, Makoto; Yamazaki, Akira; Tomishima, Shigeki; and Yamagata, Tadato, 5,910,181, Cl. 714-718.900.

Iwamatsu, Toshiaki; and Ipposhi, Takashi, 5,910,672, Cl. 257-347.000.

Kasai, Yoshio, 5,910,674, Cl. 257-369.000.

Kobayashi, Kei-Ichiro; Kato, Tomoaki; Takada, Yoshio; Wada, Osamu; Kobayashi, Masahiro; Furuse, Naomi; Fujiwara, Yukio; Shichimiya, Shoichi; and Ishibe, Shinji, 5,910,761, Cl. 338-21.000.

Nishi, Kenichiro; Nagai, Satoshi; Eguchi, Kentaro; Arai, Takeshi; *Bunya, Jun; Shimizu, Kazutaka; Shibata, Koji; and Ogawa, Isamu, 5,910,713, Cl. 315-308.000.*

Okuda, Hiroshi, 5,909,915, Cl. 29-841.000.

Ueda, Naoki; Noguchi, Tadayuki; Sakai, Shuji; Tanaka, Kuniaki; and Kittaka, Yoshiaki, 5,910,807, Cl. 345-515.000.

Watanabe, Masahiro, 5,910,786, Cl. 342-70.000.

Yamashita, Tomohiro; and Shimizu, Satoshi, 5,911,103, Cl. 438-*199.000.*

Yoshimura, Motomu, 5,910,393, Cl. 430-270.110.

Mitsubishi Electric Information Technology Center America, Inc. (ITA): *See—*

Johari, Ramesh; Marks, Joseph; Partovi, Ali; and Shieber, Stuart Merrill, *5,911,146, Cl. 707-525.000.*

Mitsubishi Electric Semiconductor Software Co., Ltd.: *See—*

Ueda, Naoki; Noguchi, Tadayuki; Sakai, Shuji; Tanaka, Kuniaki; and *Kittaka, Yoshiaki, 5,910,807, Cl. 345-515.000.*

Mitsubishi Gas Chemical Company, Inc.: *See—*

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Mitsubishi Heavy Industries, LTD.: *See—*

Seki, Yukuharu; and Kato, Toshihide, 5,910,230, Cl. 156-470.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*

Ichimoto, Kazuhiro; Nakayama, Osamu; Kishimoto, Mitsuru; Iida, *Kazumasa; Tamura, Hiroki; Miyamoto, Katsuhiko; and Ando,* Hiromitsu, 5,909,723, Cl. 123-406.000.

Mitsubishi Lighting Fixture Co., Ltd.: See—

Nishi, Kenichiro; Nagai, Satoshi; Eguchi, Kentaro; Arai, Takeshi; Bunya, Jun; Shimizu, Kazutaka; Shibata, Koji; and Ogawa, Isamu, 5,910,713, Cl. 315-308.000.

Mitsubishi Paper Mills Limited: *See—*

Kondo, Toshiro; Araki, Yutaka; Fujioka, Hajime; and Oko, Makiko, 5,910,391, Cl. 430-204.000.

Mitsubishi Pencil Kabushiki Kaisha: *See—*

Kobayashi, Seiichi, 5,909,975, Cl. 401-30.000.

Mitsui Chemicals, Inc.: *See—*

Ito, Kiyoshi; Yamaki, Toshifumi; Arii, Teruo; Tsuruoka, Miyuki; and Nakamura, Takeshi, 5,910,432, Cl. 435-129.000.

Matsunaga, Shin-ya; and Wakumoto, Hiroshi, 5,910,539, Cl. 525-88.000.

Yasuda, Masaaki, 5,910,591, Cl. 546-242.000.

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Kurosawa, Hisao; Mitsumata, Chiharu; Kobayashi, Toshio; and Noguchi, Shin, 5,910,868, Cl. 360-113.000.

Mitsuyama, Satoshi; Motoike, Jun; Oowada, Norio; and Kojima, Yasuaki, to *Hitachi, Ltd. Pattern recognition system. 5,911,002, Cl. 382-158.000.*

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Mittendorf, Joachim; Fey, Peter; Junge, Bodo; Kaulen, Johannes; van Laak, Kai; Meier, Heinrich; and Schohe-Loop, Rudolf, to Bayer Aktiengesellschaft. Highly selective process for the preparation of enantiomerically pure phenylsubstituted 1,4-dihydropyridine-3,5-dicarboxylic acid derivatives. 5,910,593, Cl. 546-278.400.

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Miyake, Masashi: *See—*

Shiga, Kiyotaka; Fukui, Akio; Terada, Kazuaki; Yamada, Takahiro; Toyoda, Haruyasu; Miyake, Masashi; and Umeda, Akihiro, 5,909,985, *Cl. 408-1.00R.*

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Nakada, Tetsuya; Kubota, Michio; Chaen, Hiroto; and Miyake, Toshio, 5,910,436, Cl. 435-193.000.

Miyamoto, Katsuhiko: *See—*

Ichimoto, Kazuhiro; Nakayama, Osamu; Kishimoto, Mitsuru; Iida, Kazumasa; Tamura, Hiroki; Miyamoto, Katsuhiko; and Ando, Hiromitsu, 5,909,723, Cl. 123-406.000.

Miyasato, Keita: *See—*

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Miyashita, Kiyoshi: *See—*

Yajima, Akitaka; Fujimori, Motoyuki; Furuhata, Mutsuya; Ushiyama, Tomiyoshi; Koide, Terunaga; Hashizume, Toshiaki; Miyashita, Kiyoshi; Harima, Hiroshi; and Naito, Keijiro, 5,909,944, Cl. 353-81.000.

Miyata, Naohiko; Momota, Masashi; and Saruta, Minoru, to Asahi Intecc Co., Ltd. Guide wire and a method of making the same. 5,910,364, Cl. 428-375.000.

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Miyazaki, Tatsuya, to Sumitomo Rubber Industries, Ltd. Pneumatic tire including sub-grooves. 5,909,756, Cl. 152-209.00R.

Miyazawa, Kenichi: *See—*

Arai, Soichiro; Miyazawa, Kenichi; Yabara, Hidefumi; Yasuda, Hiroshi; and Nakatani, Takayuki, 5,910,658, Cl. 250-492.220.

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Wada, Tetsuya; and Mizumoto, Toru, 5,910,046, Cl. 463-6.000.

Mizuta, Muneo, to Jatco Corporation. Lubricating structure of automatic transmission. 5,910,062, Cl. 475-159.000.

Mizutani, Hikaru, to Hitachi Maxell, Ltd. Disc cartridge lid structure. 5,910,941, Cl. 369-291.000.

MKS Instruments, Inc.: *See—*

Denner, John A., 5,911,162, Cl. 73-718.000.

MMC Networks, Inc.: *See—*

Joffe, Alexander, 5,910,928, Cl. 365-230.050.

Mobil Oil Corporation: *See—*

Senior, Richard C.; Smalley, Christopher G.; and Holtan, Timothy P., *5,910,240, Cl. 208-113.000.*

Mochida, Tsuneaki: *See—*

Yamasaki, Nakamichi; Mochida, Tsuneaki; Maeda, Akihiro; Fukuda, Takeshi; and Morimura, Tsuyoshi, 5,910,298, Cl. 423-592.000.

Mochizuki, Amane: See—

Hachisuka, Hisao; Kondo, Yoshihiko; Ikeda, Kenichi; Takano, Hitoshi; and Mochizuki, Amane, 5,910,357, Cl. 428-315.500.

Mochizuki, Norio: *See—*

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Mochizuki, Seiji: *See—*

Fukasawa, Shigenori; Isono, Masahiro; Kawakami, Kazuhisa; Mochizuki, Seiji; Takahashi, Nobuhito; and Kobayashi, Atsushi, 5,910,808, *Cl. 347-30.000.*

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Moczygemba, George A.: *See—*

Trepka, William J.; Moczygemba, George A.; Stacy, Nathan E.; and Farrar, Ralph C., Jr., 5,910,546, Cl. 525-314.000.

Modine Manufacturing Co.: *See—*

Reinke, Michael J.; and Voss, Mark, 5,910,167, Cl. 62-525.000.

Modrovich, Ivan E.; Kwan, Shing S.; and Wortham, Leon C., to Medical Analysis Systems, Inc. Stable single liquid alpha-amylase reagent. 5,910,422, Cl. 435-22.000.

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Moineau, Sylvain; Holler, Barbara J.; Vandenbergh, Peter A.; Vedamuthu, Ebenezer R.; and Kondo, Jeffrey K., to Quest International Flavors & Food Ingredients Company. *DNA encoding phage abortive infection protein from Lactococcus lactis and method of use thereof.* 5,910,571, Cl. 530-350.000.

Mok, Clement: *See—*

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Mok, Lawrence Shungwei: See—

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Molander, Mark Edward: *See—*

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Molbek, Jens H.; Lewis, Carol; Carlson, Johanna; and Doran, Michael, to Coinstar, Inc. Donation transaction method and apparatus. 5,909,794, Cl. 194-236.000.

Molex Incorporated: *See—*

Geib, Lawrence E.; Krishnaswamy, Chandrasekaran; and Meyer, Gregory Paul, *5,910,026*, Cl. *439-471.000.*

Molla, Jaynal A.: *See—*

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Molock, Frank F.: See—

Nunez, Ivan M.; Molock, Frank F.; Elliott, Laura D.; and Ford, James D., 5,910,519, Cl. 522-106.000.

Molvig, Kim; Chen, Hudong; Teixeira, Christopher M.; Remondi, Stephen; Hill, David Lawrence; Garg, Fungyan; Alajbegovic, Alen; and Hoch, James E., Jr., to Exa Corporation. Computer simulation of physical processes. 5,910,902, Cl. 364-578.000.

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Monarch Marking Systems, Inc.: *See—*

Medgyesh, John D.; Mahony, James A.; Hamisch, Paul H., Jr.; and Fogle, Ronald L., 5,910,227, Cl. 156-384.000.

Monroe, Midori Jean; and Messer, Dion Dee, to Audio DigitalImaging Inc. Parallel processing building block chip. 5,911,082, Cl. 395-800.350.

Monsanto Company: *See—*

Mao, Michael K., *5,910,596*, Cl. *548-377.100.*

Montell Technology Company bv: See—

Resconi, Luigi; Galimberti, Maurizio; Piemontesi, Fabrizio; Guglielmi, Floriano; and Abbiatici, Enrico, 5,910,464, Cl. 502-111.000.

Moore, Peter K.: See—

Bohr, Mark T.; Brigham, Lawrence N.; Moon, Peter K.; and Morimoto, Seiichi, 5,911,111, Cl. 438-585.000.

Moon, Sung Ho: *See—*

Jin, Jong Man; Moon, Sung Ho; and Park, Jong Jin, 5,909,706, Cl. 101-126.000.

Moore, Emily L.: See—

Mychajlowskij, Walter; Ong, Beng S.; Moore, Emily L.; and Patel, Raj *D., 5,910,387*, Cl. *430-110.000.*

Moore, George G.: *See—*

Shaffer, James D.; and Moore, George G., 5,910,982, Cl. 379-220.000.

Moore, Robert, to Gateway 2000, Inc. Stand alone optical disc player module. 5,910,933, Cl. 369-33.000.

Moors, Rainer: *See—*

McKee, Graham Edmund; Moors, Rainer; Gausepohl, Hermann; and *Seibring, Joachim, 5,910,553*, Cl. *526-319.000.*

Morgan, Shanon; Keith, Michael W.; Nelms, Kevin P.; and *Mills, David*, to Fieldtech Avionics and Instruments, Inc. Method and apparatus for heating a surgical instrument. 5,910,106, Cl. 600-169.000.

Mori, Atsushi; and Nakata, Yoshinori, to Fanuc, *Ltd. Laser machining device* and laser machining method of a round hole. 5,910,261, Cl. 219-121.710.

Morijiri, Hisao: *See—*

Matsumura, Yasuo; Serizawa, Manabu; Suwabe, Masaaki; Sato, Shuji; Kadokura, Yasuo; Morijiri, Hisao; Shoji, Takeshi; and Mizoguchi, *Takahiro, 5,910,389*, Cl. *430-111.000.*

Morimoto, Kazunobu: *See—*

Tochio, Tatsuya; Tada, Osamu; Oguma, Toshio; Morimoto, Kazunobu; and Fujii, Mototsugu, 5,911,061, Cl. 395-500.440.

Morimoto, Seiichi: *See—*

Bohr, Mark T.; Brigham, Lawrence N.; Moon, Peter K.; and Morimoto, Seiichi, 5,911,111, Cl. 438-585.000.

Morimura, Tsuyoshi: *See—*

Yamasaki, Nakamichi; Mochida, Tsuneaki; Maeda, Akihiro; Fukuda, Takeshi; and Morimura, Tsuyoshi, 5,910,298, Cl. 423-592.000.

Morita, Sadao: *See—*

Nishizawa, Hirotaka; Miura, Tomoyoshi; Anjou, Ichirou; Ishihara, Masamichi; Yamamura, Masahiro; Morita, Sadao; Araki, Takashi; Inoue, Kiyoshi; Sugano, Toshio; Kohara, Tetsuji; Yamada, Toshio; *Sekine, Yasushi; Anata, Yoshiaki; Goto, Masakatsu; Kasai, Norihiko;* Takeura, Shinobu; Tsukuda, Mutsuo; Yamaguchi, Yasunori; Sawada, Iiro; Iwai, Hidetoshi; Tsukui, Seiichiro; Kaji, Tadao; and Shiozawa, *Noboru, 5,910,010*, Cl. *438-15.000.*

Moritz, Mats, to Keckum Senics AB. Sound generator. 5,910,648, Cl. *181-175.000.*

Moriyasu, Sei; Ohmori, Hitoshi; Nakagawa, Takeo; Yamaguchi, Ichirou; and Kato, Jun-Ichi, to Institute of Physical and Chemical Research, The. *Method of controlling shape and NC processing apparatus utilizing the* method. 5,910,040, Cl. 451-5.000.

Morman, Michael Tod, to Kimberly Clark Worldwide, Inc. Method for *forming an elastic necked-bonded material. 5,910,224*, Cl. *156-178.000.*

Morooka, Katsuhiro: See—

Adachi, Chihaya; Sasaki, Masaomi; Nagai, Kazukiyo; Shimada, Tomoyuki; Tanaka, Chiaki; Tamoto, Nozomu; Katayama, Akira; Anzai, Mitsutoshi; Imai, Akihiro; and Morooka, Katsuhiro, 5,910,561, Cl. 528-196.000.

Morotomi, Hidetoshi: See—

Hase, Yoshihiko; Morotomi, Hidetoshi; Okamoto, Hiromi; Komura, Syuji; Takigawa, Yasuyuki; Hirano, Shigeyuki; and Shinde, Tetsuo, 5,910,383, Cl. 429-231.400.

Morris, Jeffrey S; Michaels, Sheldon B; and Giubardo, Mark J. Scanner with *audible identification of tuned channel. 5,911,118*, Cl. *455-156.100.*

Morrison, Matthew M.; Loveless, Eric A.; Brumfield, David L.; Barker, B. Thomas; Carroll, Catalina J.; Miller, David; and Petit, Dominique, to SDGI Holdings, Inc. Rod introduction apparatus. 5,910,141, Cl. 606-61.000.

Morse, Gary J.: *See—*

Klein, Thomas L.; Morse, Gary J.; and Nelms, Robert N., 5,910,778, Cl. 340-825.440.

Mosing, Donald: *See—*

Castille, Dale J.; Webre, Michael; and Mosing, Donald, 5,909,768, Cl. *166-77.100.*

Motoike, Jun: *See—*

Mitsuyama, Satoshi; Motoike, Jun; Oowada, Norio; and Koijma, Yasuaki, *5,911,002*, Cl. *382-158.000.*

Motorola, Inc.: *See—*

Calfcotte, Mark J.; and Storm, Brian D., 5,910,944, Cl. *370-311.000.*

Circello, Joseph C.; Hardage, James N., Jr.; and Harris, Glen A., 5,911,151, Cl. 711-201.000.

Doran, Patrick J., 5,911,124, Cl. 455-570.000.

Klein, Thomas L.; Morse, Gary J.; and Nelms, Robert N., 5,910,778, Cl. 340-825.440.

Koskinen, Vladimir; and Afek, Yachin, 5,910,736, Cl. 323-315.000.

Lane, John E.; Henry, Dan; and Choe, Johnny, 5,910,994, Cl. *381-93.000.*

Lin, Jyh-Han; Achyutuni, Pavan Jyotsna; Danait, Sachin Waman; Briançon, Alain Charles Louis; and Hill, Casey Thomas, 5,911,137, Cl. *705-37.000.*

Maniar, Papu D., 5,910,680, Cl. *257-650.000.*

Pearce, Michael David; Zurcher, Rodd Bryan; and Oberlander, Lewis B., 5,910,951, Cl. 370-351.000.

Schmitt, Judith E.; and Buchalo, John E., 5,910,782, Cl. *340-995.000.*

Taraboulos, Mark; Phelps III, William; and Yahaya, Fauzi, 5,910,380, Cl. 429-100.000.

Moulton, Roger D.; and Hellums, Mark W., to Sachem, Inc. Process for *recovering organic hydroxides from waste solutions. 5,910,237*, Cl. *204-*541.000.

Mount Sinai School Of Medicine: See—

Gelman, Irwin H., 5,910,442, Cl. 435-325.000.

Moynihan, Edward R.: See—

Brooks, Jeffrey B.; Spehrley, Charles W., Jr.; Barss, Steven H.; Moynihan, Edward R.; Hine, Nathan P.; and Gailus, David W., 5,910,810, Cl. 347-88.000.

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Mrenna, Stephen A.: *See—*

Maloney, James G.; and Mrenna, Stephen A., 5,910,758, Cl. 335-35.000.

MTD Products Inc: See—

Hobrath, Gerald, 5,909,887, Cl. 280-32.700.

Mueller, Bernard K., to Sealwrap Systems LLC. Methods for installing a golf club grip onto a golf club shaft. 5,909,912, Cl. 29-446.000.

Mueller, James G.: *See—*

Bernhardt, Bruno; Langley, William G.; Klingel, Eric J.; Mueller, James G.; and Lakhwala, Fayaz, 5,910,245, Cl. 210-170.000.

Mugalian, Brian P.: *See—*

Mears, Gregory C.; and Mugalian, Brian P., 5,910,775, Cl. 340-815.400.

Mukohzaka, Naohisa, to Hamamatsu Photonics K.K. Individual identification apparatus based on frequency domain correlation of plural reference images and a target image. 5,910,999, Cl. 382-124.000.

Müller, Ruth: *See—*

Schwalge, Barbara; Müller, Ruth; Bayer, Herbert; Sauter, Hubert; Ammermann, Eberhard; Lorenz, Gisela; and Strathmann, Siegfried, 5,910,500, Cl. 514-275.000.

Munsche, Denis; and Schwalenberg, Daniel, to Productive Solutions Inc. Flushing cleaner for multiple shower wand assemblies. 5,909,847, Cl. 239-116.000.

Murachi, Mikio: *See*—
Yamashita, Koichi; and Murachi, Mikio, 5,910,466, Cl. 502-300.000.

Murakami, Kunihiko: *See*—
Yoshinosabo, Kentaro; and Murakami, Kunihiko, 5,911,125, Cl. 702-141.000.

Murali, Dhanabalan: See—
Hausheer, Frederick H.; Petfuru, Pavankumar N.V.; Reddy, Dasharatha; Murali, Dhanabalan; Haridas, Kochat; Seetharamulu, Peddaiahgari; and Yao, Shijie, 5,910,491, Cl. 514-63.000.

Muranishi, Hiroya: See—
Hoshino, Tetsuo; Muranishi, Hiroya; Taketomi, Shigehisa; and Iwasa, Susumu, 5,910,492, Cl. 514-314.000.

Murata Manufacturing Co., Ltd.: *See*—
Ueno, Yasushi, 5,910,881, Cl. 361-313.000.

Murata, Masahiko: *See*—
Onodera, Ken; and Murata, Masahiko, 5,911,147, Cl. 711-5.000.

Murata, Yasuyuki; Tohriiwa, Norio; and Nakanishi, Yoshinori, to Shell Oil Company. Process for producing modified epoxy resin, modified epoxy resin produced, and epoxy resin composition thereof. 5,910,548, Cl. 525-438.000.

Muraya, Takashi: See—
Adachi, Katsura; Usui, Makoto; Nishii, Kota; Muraya, Takashi; Kobayashi, Toshihiro; Tamura, Kazuyuki; and Sato, Junichi, 5,909,819, Cl. 220-623.000.

Murex Securities, Ltd.: *See*—
Shaffer, James D.; and Moore, George G., 5,910,982, Cl. 379-220.000.

Murray, Brent W., to Carefree/Scott Fetzer Company. Combination awning clamp and rafter arm lock with canopy tensioning capabilities. 5,909,761, *Cl. 160-71.000.*

Muscarella, Patrick; Quinter, Gary A.; Toland, David R.; and Hugick, James, to Dover Industries, Inc. Multiple spindle screw machine. 5,910,201, Cl. 82-129.000.

Mussell, Robert D.: See—
Schmidt, Donald L.; and Mussell, Robert D., 5,910,532, Cl. 524-556.000.

Mychajlowskij, Walter; Ong, Beng S.; Moore, Emily L.; and Patel, Raj D., to Xerox Corporation. Toner compositions with acrylonitrile and processes. *5,910,387, Cl. 430-110.000.*

Myer, William R.; Novelli, Alfonse V.; Van Rietschoten, Henk A.; and Van Denend, Mark. Duplex slitter/rewinder with automatic splicing and surface/center winding. 5,909,856, Cl. 242-530.000.

Myers, David J.; and Lewis, James D., to W. L. Gore & Associates, Inc. Prosthetic vascular graft. 5,910,168, Cl. 623-1.000.

Myung, Yeo-Seok, to SamSung Electronics Co., Ltd. Method for printing in *a draft mode of a serial printer. 5,909,974, Cl. 400-283.000.*

N.V. Raychem, S.A.: See—
Macken, Luk Jozef; and Van Noten, Lodewijk Cordula Michael, 5,911,027, Cl. 385-135.000.

Na, Woon: *See*—
Paik, Joon-ki; and Na, Woon, 5,910,818, Cl. 348-222.000.

Nabata, Norikane: See—
Ishino, Toshiaki; Nabata, Norikane; and Maeoka, Takuya, 5,910,277, Cl. *264-127.000.*

Nabel, Elizabeth G.: See—
Nabel, Gary J.; Nabel, Elizabeth G.; Lew, Denise; and Marquet, Magda, 5,910,488, Cl. 514-44.000.

Nabel, Gary J.; Nabel, Elizabeth G.; Lew, Denise; and Marquet, Magda, to Vical Incorporated. Plasmids suitable for gene therapy. 5,910,488, Cl. 514-44.000.

Naccache, David, to Gemplus. Method for the generation of electronic *signatures, in particular for smart cards. 5,910,989, Cl. 380-25.000.*

Naem, Abdalla Aly, to National Semiconductor Corporation. Method of simultaneous formation of salicide and local interconnects in an integrated circuit structure. 5,911,114, Cl. 438-684.000.

Nagai, Kazukiyo: *See*—
Adachi, Chihaya; Sasaki, Masaomi; Nagai, Kazukiyo; Shimada, Tomoyuki; Tanaka, Chiaki; Tamoto, Nozomu; Katayama, Akira; Anzai, Mitsutoshi; Imai, Akihiro; and Morooka, Katsuhiro, 5,910,561, *Cl. 528-196.000.*

Nagai, Satoshi: *See*—
Nishi, Kenichiro; Nagai, Satoshi; Eguchi, Kentaro; Arai, Takeshi; *Bunya, Jun; Shimizu, Kazutaka; Shibata, Koji; and Ogawa, Isamu,* 5,910,713, Cl. 315-308.000.

Nagamoto, Itsushi; and Tsuchida, Atsushi, to Yamaha Corporation. Golf club. 5,910,056, Cl. 473-305.000.

Nagano, Hiroshi: *See*—
Nishimura, Takashi; Sekiya, Naohide; Kimura, Takeshi; Inoue, Hideki; Nagano, Hiroshi; and Taoka, Ikuo, 5,910,955, Cl. 370-401.000.

Nagasaki, Yukio: *See*—
Kato, Masao; Kataoka, Kazunori; Nagasaki, Yukio; and Takezawa, Tsutomu, 5,910,485, Cl. 514-34.000.

Nagasamy, Vijay: *See*—
Dangelo, Carlos; and Nagasamy, Vijay, 5,910,897, Cl. 364-488.000.

Nagase, Makoto: *See*—
Audenaert, Frans A.; Allewaert, Kathy E.M.L.A.; Hooftman, Gert; Nagase, Makoto; and Lens, Hugo R., 5,910,557, Cl. 528-70.000.

Nagashima, Tohru; Nakamura, Hiroshi; Nomura, Hideo; and Maeda, Mituo, to Sumitomo Chemical Company, Ltd. Thermoplastic resin composition and molded article. 5,910,560, Cl. 528-196.000.

Nagata, Junichi; and Hayakawa, Junji, to Denso Corporation. Differential-*type data transmitter. 5,910,736, Cl. 326-126.000.*

Nagata, Kouichi: *See*—
Kikuchishi, Kenroshi; and Nagata, Kouichi, 5,910,859, Cl. 359-554.000.

Nair, N. Gopolan; and Brun, Zdenek, to Intel Corporation. Data transmission *over amps networks. 5,911,115, Cl. 455-63.000.*

Naito, Keijiro: *See*—
Yajima, Akitaka; Fujimori, Motoyuki; Furuhata, Mutsuya; Ushiyama, Tomiyoshi; Koide, Terunaga; Hashizume, Toshiaki; Miyashita, Kiyoshi; Harima, Hiroshi; and Naito, Keijiro, 5,909,944, Cl. 353-81.000.

Naito, Takao, to Fujitsu Limited. Polarization scrambler and integrated optical circuit making use thereof. 5,911,016, Cl. 385-3.000.

Najork, Rolf: *See*—
Krauss, Christian; Najork, Rolf; Woltny, Thomas; and Flintrop, Thomas, 5,910,068, Cl. 477-109.000.

Naka, Michio, to Kyoto Daiichi Kagaku Co., Ltd. Optical system and light emitting diode having a light dividing surface portion. 5,910,663, Cl. 257-81.000.

Nakada, Kazuhiko; Saito, Naomi; Nishibayashi, Misako; Nakamura, Atsuyuki; and Hishida, Yasuhito, to Menicon Co., Ltd. Oxygen permeable *contact lens having high durable hydrophilic surface and method for* producing the same. 5,910,518, Cl. 523-106.000.

Nakada, Tetsuya; Kubota, Michio; Chaen, Hiroto; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Trehalose phosphorylase, its preparation and uses. 5,910,436, Cl. 435-193.000.

Nakade, Shinichi: See—
Tanaka, Yasuyuki; Nakade, Shinichi; Ochi, Atsuko; Sakaki, Toshiaki; Hayashi, Masaharu; Sekiguchi, Kazuhiro; Kuga, Akihito; and Kanamaru, *Eiji, 5,910,567, Cl. 528-491.000.*

Nakagami, Yasuhiro: *See*—
Haga, Masayasu; Yoshiyama, Tsugihito; Nakagami, Yasuhiro; Matsuura, Masami; and Hirota, Akira, 5,911,097, Cl. 399-174.000.

Nakagawa, Norihisa, to Toyota Jidosha Kabushiki Kaisha. Evaporated fuel treatment device of an engine. 5,909,727, Cl. 123-520.000.

Nakagawa, Ryoji: See—
Kitagawa, Naoki; and Nakagawa, Ryoji, 5,910,331, Cl. 426-327.000.

Nakagawa, Shinichi: *See*—
Ishihara, Hiroki; Nakagawa, Shinichi; Mochizuki, Norio; and Ishida, Masaharu, 5,910,336, Cl. 427-240.000.

Nakagawa, Takeo: See—
Moriyasu, Sei; Ohmori, Hitoshi; Nakagawa, Takeo; Yamaguchi, Ichirou; *and Kato, Jun-Ichi, 5,910,040, Cl. 451-5.000.*

Nakaho, Jun-ichi: See—
Kawamoto, Masayuki; Tsuch., Kimitoshi; and Nakaho, Jun-ichi, *5,910,781, Cl. 340-870.370.*

Nakai, Masatoshi: See—
Hirayama, Koichi; Nakai, Masatoshi; and Shimoda, Kenji, 5,911,032, Cl. 386-95.000.

Nakajima, Tadashi; Sakata, Junji; and Kawagoe, Takahiro, to Bridgestone Corporation. Electroconductive member and electrophotogrpahic apparatus. 5,911,099, Cl. 399-286.000.

Nakajima, Toshifumi, to Canon Kabushiki Kaisha. Image communication *apparatus and image processing apparatus. 5,911,010, Cl. 382-239.000.*

Nakamura, Atsuyuki: See—
Nakada, Kazuhiko; Saito, Naomi; Nishibayashi, Misako; Nakamura, Atsuyuki; and Hishida, Yasuhito, 5,910,518, Cl. 523-106.000.

Nakamura, Haruo: See—
Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,910,809, Cl. 347-72.000.

Nakamura, Hidekazu: See—
Oshiro, Takeo; Hirosawa, Masao; Kanno, Hiroshi; Nakamura, Hidekazu; Ono, Yasuyuki; Goto, Takashi; and Yamamoto, Naoki, 5,910,328, Cl. 425-595.000.

Nakamura, Hidenobu: See—
Atsumi, Tomoyuki; Kato, Tomokazu; Nakamura, Hidenobu; and Asai, Hiroyuki, 5,911,095, Cl. 399-80.000.

Nakamura, Hirofumi: *See*—
Urata, Hisao; Aoshima, Takayuki; Oshiki, Toshiyuki; Takahara, Jun; Iwade, Shinji; Nanba, Yoshiaki; Araki, Yoshitaka; Nakamura, Hirofumi; and Okano, Takeshi, 5,910,619, Cl. 585-513.000.

Nakamura, Hiroshi: *See*—
Nagashima, Tohru; Nakamura, Hiroshi; Nomura, Hideo; and Maeda, Mituo, 5,910,560, Cl. 528-196.000.

Nakamura, Kenichiro: *See*—
Saeda, Koichi; Komada, Minoru; Nakamura, Kenichiro; and Mitsuyama, Toshio, 5,910,692, Cl. 310-13.000.

Nakamura, Takayuki: See—
Uchida, Hiroki; Kiso, Masayuki; Nakamura, Takayuki; Kamitamari, Tohru; Susuki, Rumiko; and Shimizu, Koichiro, 5,910,340, Cl. 427-437.000.

Nakamura, Takeshi: *See*—
Ito, Kiyoshi; Yamaki, Toshifumi; Arii, Teruo; Tsuruoka, Miyuki; and Nakamura, Takeshi, 5,910,432, Cl. 435-129.000.

Nakamura, Yasushi; and Otsuka, Seiichiro, to Shin-Etsu Handotai Co., Ltd. Crystal holding apparatus. 5,910,216, Cl. 117-218.000.

Nakamura, Yuzo: *See*—

Yanai, Yuichi; Hirai, Takayuki; Oba, Masayoshi; Ikeda, Kiyoshi; Takagi, Yasushi; Ishikawa, Takeo; Harada, Kazuhiko; Iida, Hirotaka; Arakawa, Kazuhiko; Ii, Masazumi; and Nakamura, Yuzo, 5,910,279, Cl. 264-282.000.
Nakanishi, Takashi: *See*—
Fukuda, Hiroyuki; Nakanishi, Takashi; and Hirose, Mitsuru, 5,910,257, Cl. 216-93.000.
Nakanishi, Yoshinori: *See*—
Murata, Yasuyuki; Tohriiwa, Norio; and Nakanishi, Yoshinori, 5,910,548, Cl. 525-438.000.
Nakano, Tatsumi: *See*—
Mikayama, Toshifumi; Tomura, Takafumi; Watarai, Hiroshi; Kuroki, Ryota; Kato, Yoichi; Ishizaka, Kimishige; and Nakano, Tatsumi, 5,910,427, Cl. 435-69.100.
Nakata, Yoshinori: *See*—
Mori, Atsushi; and Nakata, Yoshinori, 5,910,261, Cl. 219-121.710.
Nakatani, Takayuki: *See*—
Arai, Soichiro; Miyazawa, Kenichi; Yabara, Hidefumi; Yasuda, Hiroshi; and Nakatani, Takayuki, 5,910,658, Cl. 250-492.220.
Nakayama, Osamu: *See*—
Ichimoto, Kazuhiro; Nakayama, Osamu; Kishimoto, Mitsuru; Iida, Kazumasa; Tamura, Hiroki; Miyamoto, Katsuhiko; and Ando, Hiromitsu, 5,909,723, Cl. 123-406.000.
Naked Eye Limited: *See*—
Rooney, Matthew Jonathan, 5,910,449, Cl. 436-165.000.
NalcoVExxon Energy Chemicals, L.P.: *See*—
Hyde, Zara; and Lewis, Vincent E., 5,910,232, Cl. 203-9.000.
Nally, Robert M.: *See*—
Sharma, Sudhir; Runas, Michael E.; and Nally, Robert M., 5,910,919, Cl. 365-189.050.
Nam, Hyo-Rak, to Samsung Electronics Co., Ltd. Liquid crystal display panels including alignment keys in the active regions thereof, and methods for manufacturing. 5,910,830, Cl. 349-158.000.
Namba, Akihiko; Ogura, Tetsuyoshi; Tomita, Yoshihiro; and Eda, Kazuo, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing a composite substrate and a piezoelectric device using the substrate. 5,910,699, Cl. 310-320.000.
Namiki, Takahisa: *See*—
Nozaki, Koji; Yano, Ei; Watanabe, Keiji; Namiki, Takahisa; and Igarashi, Miwa, 5,910,392, Cl. 430-270.100.
Nanba, Yoshiaki: *See*—
Urata, Hisao; Aoshima, Takayuki; Oshiki, Toshiyuki; Takahara, Jun; Iwade, Shinji; Nanba, Yoshiaki; Araki, Yoshitaka; Nakamura, Hirofumi; and Okano, Takeshi, 5,910,619, Cl. 585-513.000.
Nanjundaswamy, K. S.: *See*—
Goodenough, John B.; Padhi, Akshaya K.; Nanjundaswamy, K. S.; and Masquelier, Christian, 5,910,382, Cl. 429-218.100.
Naoi, Yukiko: *See*—
Tanaka, Kazuna; Kapec, Jeffrey; and Naoi, Yukiko, 5,909,759, Cl. 16-112.000.
Narayana, Kalavaru Venkata: *See*—
Rao, Panja Kanta; Rao, Kamaraju Seetha Rama; Rao, Vattikonda Venkata; Narayana, Kalavaru Venkata; Venugopal, Akula; Rao, Alla Venkata Rama; and Subrahmanyam, Machiraju, 5,910,465, Cl. 502-209.000.
Narita, Kaoru: *See*—
Horiguchi, Yoko; Narita, Kaoru; and Fujii, Takeo, 5,910,675, Cl. 257-370.000.
Narui, Yoshihisa; Ouchiyama, Motoki; and Yagi, Yoko, to Sony Corporation. Video display apparatus. 5,910,806, Cl. 345-508.000.
Natali, Francis F.; and Ohlson, John E., to Stanford Telecommunications, Inc. Power efficient paging for mobile users in a terrestrial and satellite communications system. 5,910,777, Cl. 340-825.440.
Nate, Kazuo: *See*—
Hira, Yasuo; Toba, Tamaki; Imayama, Hirotaka; Ohkawa, Atsuko; Fujisawa, Masayasu; Nate, Kazuo; Sonobe, Hideki; Suzuki, Saburo; Togawa, Eisei; Ishizaki, Hiroshi; and Hagiwara, Yoshiki, 5,910,864, Cl. 360-103.000.
Nathan, Aruna: *See*—
Kydonieus, Agis; Shah, Kishore; and Nathan, Aruna, 5,910,536, Cl. 524-590.000.
National Instruments Corporation: *See*—
Qian, Shie; and Dunham, Mark E., 5,910,905, Cl. 364-724.080.
National Jewish Center for Immunology and Respiratory Medicine: *See*—
Gelfand, Erwin W.; and Johnson, Gary L., 5,910,417, Cl. 435-7.200.
National Science Council: *See*—
Cheng, Chi-Cheng; and Chen, Gin-Shan, 5,909,941, Cl. 33-644.000.
National Semiconductor Corporation: *See*—
Bolua, Luis Sergio V.; Hoang, Tuong Hai; Lo, Tony S.; and DeClue, Larry W., 5,910,873, Cl. 361-56.000.
Naem, Abdalla Aly, 5,911,114, Cl. 438-684.000.
Razouk, Reda R.; Egan, Kulwant S.; Yindeepol, Wipawan; and Koscielniak, Waclaw C., 5,911,109, Cl. 438-424.000.
Natsuhara, Toshiya: *See*—
Ueda, Takamasa; Natsuhara, Toshiya; Asano, Masaki; and Hotomi, Hideo, 5,910,211, Cl. 106-31.430.
Navarrini, Walter: *See*—
Wlassics, Ivan; and Navarrini, Walter, 5,910,587, Cl. 544-216.000.
Nayar, Rajiv: *See*—
Guo, John W.; and Nayar, Rajiv, 5,911,165, Cl. 73-827.000.
NCR Corporation: *See*—
Dove, Lee G., 5,910,986, Cl. 380-23.000.
Neale, Paul V.: *See*—
Andrews, Christopher C.; and Neale, Paul V., 5,910,101, Cl. 600-3.000.
NEC Corporation: *See*—
Horiguchi, Yoko; Narita, Kaoru; and Fujii, Takeo, 5,910,675, Cl. 257-370.000.
Inata, Hisashi, 5,910,953, Cl. 370-395.000.
Irino, Hitoshi, 5,910,677, Cl. 257-393.000.
Ishige, Ryuuichi; and Kondo, Reishi, 5,910,997, Cl. 381-314.000.
Ishiwata, Nobuyuki, 5,910,870, Cl. 360-113.000.
Kikuchi, Tsuneyuki; and Sameshima, Takashi, 5,911,030, Cl. 386-55.000.
Kimura, Katsuji, 5,910,749, Cl. 327-541.000.
Ninomiya, Takafumi, 5,910,036, Cl. 445-23.000.
Ohmuro, Norihiko; Kuramoto, Akio; and Tanabe, Kosuke, 5,910,790, Cl. 343-895.000.
Sasaki, Masakazu, 5,911,105, Cl. 438-258.000.
Takemura, Hisashi, 5,910,701, Cl. 313-309.000.
Takeuchi, Takeshi, 5,910,012, Cl. 438-31.000.
Tanaka, Takao, 5,911,107, Cl. 438-276.000.
Tasaka, Kazuhiro, 5,911,106, Cl. 438-276.000.
Watanabe, Hirohito; and Honma, Ichiro, 5,910,019, Cl. 438-488.000.
Watanabe, Hiroyuki, 5,910,741, Cl. 327-150.000.
Watarai, Seiichi, 5,910,744, Cl. 327-263.000.
Yamada, Yoshiaki, 5,910,020, Cl. 438-624.000.
NEC Electronics Inc.: *See*—
Luan, Chung-Chen; Chong, Siu-Ming; Wang, James H.; Wong, John; and Yeh, Gong-Jong, 5,911,149, Cl. 711-147.000.
Neely, Phillip K., to Sony Corporation; and Digital Audio Disc Corporation. Label assembly for package sleeve accommodating a storage media disc and method for sealing a package sleeve. 5,909,805, Cl. 206-308.100.
Neissl, Wolfgang: *See*—
Ernst, Eberhard; Reussner, Jens; and Neissl, Wolfgang, 5,910,463, Cl. 502-107.000.
Nellcor Puritan Bennett Incorporated: *See*—
Solenberger, Stephen D., 5,910,108, Cl. 600-310.000.
Nelms, Kevin P.: *See*—
Morgan, Shanon; Keith, Michael W.; Nelms, Kevin P.; and Mills, David, 5,910,106, Cl. 600-169.000.
Nelms, Robert N.: *See*—
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Richardson, Richard James; and Crown, Charles E., 5,910,083, Cl. 52-171.100.
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Chuck, George S.; Dooner, Hugo K.; Courtney-Gutterson, Neal; Keller, Janis; Nijjar, Charanjit S.; and Ralston, Edward J., 5,910,627, Cl. 800-205.000.
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Yanai, Yuichi; Hirai, Takayuki; Oba, Masayoshi; Ikeda, Kiyoshi; Takagi, Yasushi; Ishikawa, Takeo; Harada, Kazuhiko; Iida, Hirotaka; Arakawa, Kazuhiko; Ii, Masazumi; and Nakamura, Yuzo, 5,910,279, Cl. 264-282.000.
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Nomura, Hideo: *See*—
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Oak, Eugene. Multi-purpose video cassette case. 5,909,807, Cl. 206-387.130.
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Hickey, Thomas B.; and Haschart, Robert J., 5,910,805, Cl. 345-467.000.
O' Donnell, Kathleen D.: *See*—
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Ohara, Jiro, to UNI Electronics Industry Co., Ltd.; Ohara, Shiro; and Ohara, Yasushi. Tag for theft prevention. 5,910,770, Cl. 340-572.500.
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Ohkubo, Takeshi; and Shimura, Kazuo, to Fuji Photo Film Co., Ltd. Bone image processing method and apparatus. 5,910,972, Cl. 378-54.000.
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Ohta, Tsunetaka: *See*—
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Ohuchi, Satoshi; and Takahashi, Sadao, to Ricoh Company, Ltd. Image processing apparatus for discriminating image characteristics using image signal information obtained in an image scanning operation. 5,911,004, Cl. 382-173.000.
Oiles Corporation: *See*—
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Oishi, Satoru, to Canon Kabushiki Kaisha. Positioning apparatus and method thereof, and exposure apparatus. 5,910,843, Cl. 356-375.000.
Okada, Shinichiro: *See*—
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Okajima, Shinpei, to Shimano Inc. Snowboard boot power lacing configuration. 5,909,946, Cl. 36-50.100.
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Hase, Yoshihiko; Morotomi, Hidetoshi; Okamoto, Hiromi; Komura, Syoji; Takigawa, Yasuyuki; Hirano, Shigeyuki; and Shiode, Tetsuo, 5,910,383, Cl. 429-231.400.
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Alfano, Stefano; Bianchetti, Giulia Ottavia; Fabri, Franca; and Pace, Luigi, 5,910,473, Cl. 510-191.000.
Broaddus, Charles David, 5,910,317, Cl. 424-439.000.
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Profit, Jack H., Jr., to Applied Microsystems, Inc. Method and apparatus for testing software. 5,911,059, Cl. 395-500.000.

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Quimby, Robert W.; Quimby, Doreen S., 5,910,057, Cl. 473-353.000.

Quimby, Robert W.; Quimby, Doreen S. (personal representative of said Dorren S. Quimby, deceased). Golf ball with distance and locating system. 5,910,057, Cl. 473-353.000.

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Quirk, Roderic Paul: *See*—
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Randall, Jimmie K. Portable collapsible livestock feeder. 5,909,717, Cl. 119-58.000.

Ranft, Philip Malone; Reese, Robert J.; and Walter, Frank Leonard, to Crane Co. Anti-pilferage door system for a vending machine. 5,909,823, Cl. 221-129.000.

Rao, Alla Venkata Rama: *See*—
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Razouk, Reda R.; Egan, Kulwant S.; Yindeepol, Wipawan; and Koscielniak, Waclaw C., to National Semiconductor Corporation. Method of forming an integrated circuit including filling and planarizing a trench having an oxygen barrier layer. 5,911,109, Cl. 438-424.000.

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Ricco, Johnny. Combination brush and hairspray system. 5,909,737, Cl. 132-116.000.

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Richardson, Ronald Harold. Self-aligning trailer hitch arrangement. *5,909,892, Cl. 280-477.000.*

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Uchiyama, Yukinaka, 5,911,005, Cl. 382-187.000.
Watanabe, Atsushi, 5,911,049, Cl. 395-280.000.

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Yamazaki, Hiroshi; and Matsumoto, Kouchi, 5,910,423, Cl. 435-28.000.

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Halbert, Thomas R.; Riley, Kenneth L.; Trachte, Kenneth L.; and Vannauker, David L., 5,910,242, Cl. 208-263.000.

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Rogovin, Daniel; Shen, Tsae-Pyng Janice; and Fisher, Yuval, 5,910,793, Cl. 345-100.000.

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Freeman, Michael Bennett; Larson, Gary Robert; Merritt, Richard Foster; Paik, Yi Hyon; Shulman, Jan Edward; Swift, Graham; and Wilczynski, Robert, 5,910,531, Cl. 524-556.000.
Mattox, John Robert; Simon, Ethan Scott; and Petigara, Ramesh Balubhai, 5,910,503, Cl. 514-372.000.

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Larsson, Eiler, 5,910,445, Cl. 436-5.000.

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Schad, Robert Dietrich; and Romanski, Zbig, 5,910,327, Cl. 425-572.000.

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Brunner, Kurt; Seitz, Karl; Ahnelt, Peter; Roth, Roland; and Dominicus, Walter, 5,909,958, Cl. 33-503.000.

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Rowe, Antony M.: *See—*
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Chu, Wayne K.; and Ruckel, Erwin R., 5,910,526, Cl. 524-270.000.

Runas, Michael E.: *See—*
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Soble, Jeffrey Scott, 5,911,133, Cl. 705-3.000.

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Rhame, William H.; Cutler, George Robert; Rustom, Bassem; and Dick, Robert L., IV, 5,911,017, Cl. 455-90.000.

Rutschmann, Richard: *See—*
Takagi, Hirohito; and Rutschmann, Richard, 5,910,935, Cl. 369-54.000.

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S&C Electric Company: *See—*
Meaes, Gregory C.; and Mugalian, Brian P., 5,910,775, Cl. 340-815.400.

S. C. Johnson & Son, Inc.: *See—*
Greatbatch, Keith J.; and Weiler, Mark E., 5,909,845, Cl. 239-44.000.
Neumiller, Phillip J.; and Rees, Wayne M., 5,910,475, Cl. 510-238.000.

S3, Incorporated: *See—*
Herz, William S.; and Graham, Jon E., 5,910,820, Cl. 348-446.000.

SA Schappe: *See—*
Guevel, Jean; Francois, Marc; and Bontemps, Guy, 5,910,361, Cl. 428-364.000.

Saadat, Vahid, to InnerDyne, Inc. Apparatus for performing surgery. 5,910,150, Cl. 606-159.000.

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Sachem, Inc.: *See—*
Moulton, Roger D.; and Hellums, Mark W., 5,910,237, Cl. 204-541.000.

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Perelle, Michel, 5,910,723, Cl. 320-119.000.

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Sahbari, Javad J., to Silicon Valley Chemlabs, Inc. Dibasic ester stripping composition. 5,909,744, Cl. 134-38.000.

Sahoo, Soumya P.: *See—*
Durette, Philippe L.; Hagmann, William K.; Lanza, Thomas J., Jr.; Sahoo, Soumya P.; Rasmusson, Gary H.; Tolman, Richard L.; and Von Langen, Derek, 5,910,497, Cl. 514-253.000.

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Hasegawa, Naoya; Saito, Masamichi; and Makino, Akihiro, 5,910,344, Cl. 427-599.000.

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Nakada, Kazuhiko; Saito, Naomi; Nishibayashi, Misako; Nakamura, Atsuyuki; and Hishida, Yasuhito, 5,910,518, Cl. 523-106.000.

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Ueda, Naoki; Noguchi, Tadayuki; Sakai, Shuji; Tanaka, Kuniaki; and Kittaka, Yoshiaki. 5,910,807, Cl. 345-515.000.

Sakaki, Toshiaki: *See—*
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Sakata, Junji: *See—*
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Akamatsu, Toyokazu; and Suzuki, Takao. 5,910,412, Cl. 435-6.000.

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Salisbury, Richard, to Source 1 Ergonomics, Inc. Compressible tube dispenser with adjustable actuating lever. 5,909,828, Cl. 222-103.000.

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Behan, Dominic P.; Vale, Wylie W., Jr.; Fischer, Wolfgang H.; and Lowry, Philip J. 5,910,428, Cl. 435-69.100.

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Tuompo, Helena; Wirtanen, Gun; Salo, Satu; Scheinin, Leena; Batsman, Ari; and Levo, Seija. 5,910,420, Cl. 435-18.000.

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Borel, Rene. 5,909,885, Cl. 280-11.220.
DeMarchi, Jean-Louis. 5,909,947, Cl. 36-50.500.

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Park, Joon-Ki; and Yu, Woon. 5,910,818, Cl. 348-222.000.

Sameshima, Takashi: *See—*
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Seronin, Alexander; and Hiterer, Moshe. 5,910,697, Cl. 310-254.000.

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Kang, Hyoung-Won. 5,911,087, Cl. 396-378.000.

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Choo, Dae-ho. 5,910,704, Cl. 313-495.000.
Lee, Sang-won; Kim, Geun-bae; Park, Yong-chul; and Kim, Sung-soo. 5,910,296, Cl. 423-430.200.

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Park, Sang Hwan. 5,910,693, Cl. 310-67.00R.

SamSung Electronics Co., Ltd.: *See—*
Ahn, Young-Sub. 5,910,861, Cl. 360-46.000.
Csapo, John S., 5,910,946, Cl. 370-328.000.
Yu, Yong, Man; Moon, Sung Ho; and Park, Jong Jin. 5,909,706, Cl. 101-126.000.
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Myung, Ho-Suck, 5,909,974, Cl. 400-283.000.
Nam, Hyo-Rak, 5,910,830, Cl. 349-158.000.
Park, Gyeong-ho, 5,911,101, Cl. 399-345.000.
Park, Young-wook; Lee, Moon-yong; Kim, Kyung-hun; and Park, In-sung, 5,910,218, Cl. 118-719.000.
Seok, Jin-oh; and Jung, Bong-cheon, 5,909,950, Cl. 362-94.000.
Yang, Sung-Dong; and Lee, Kwan-Ho. 5,911,079, Cl. 395-750.010.
Yeom, Yun-pil, 5,911,080, Cl. 395-750.010.
Yu, Pil-ho, 5,910,824, Cl. 348-714.000.

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Kim, Jong Gun; Huh, Seong Chul; and Kwon, Ki Ryong, 5,910,715, Cl. 318-254.000.

Sander, Wendell B.: *See—*
Chen, Chang-sheng; Marcoux, Phil P.; Sander, Wendell B.; and Young, James L., 5,910,687, Cl. 257-784.000.

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Guterman, Daniel C.; Samachisa, Gheorghe; Fong, Yupin Kawing; and Harari, Eliyahou. 5,910,915, Cl. 365-185.280.
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Fahlcroff, Wagidi; and Sandmair, Harald. 5,910,528, Cl. 524-315.000.

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Soldavini, Attilio. 5,909,796, Cl. 198-369.200.

Sankyo Manufacturing Co., Ltd.: *See—*
Kato, Heizaburo; and Kojima, Osamu. 5,909,815, Cl. 209-653.000.

Sankyo Seiki Mfg. Co., Ltd.: *See—*
Yutaka, Ishizuka. 5,910,853, Cl. 359-200.000.

Sano, Naoki: *See—*
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Okamoto, Yutaka. 5,910,191, Cl. 74-473.140.

Sante International Inc.: *See—*
D'Iang, Arthur H. K.. 5,910,308, Cl. 424-195.100.

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Yokozawa, Shinjiro; Kodama, Nobumasa; Ogawara, Toshiki; Kodaira, Yuichi; and Watanabe, Michinori. 5,910,694, Cl. 310-89.000.

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Sartorius, Thomas Andrew: *See—*
Dieffenderfer, James N.; Diniz, George Filip; and Sartorius, Thomas Andrew. 5,910,930, Cl. 368-156.000.

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Sato, Junichi: *See—*
Adachi, Katsura; Usui, Makoto; Nishii, Kota; Muraya, Takashi; Kobayashi, Toshihiro; Tamura, Kazuyuki; and Sato, Junichi. 5,909,819, Cl. 220-623.000.

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Sato, Osamu, to Canon Kabushiki Kaisha. *Sheet convey apparatus. 5,910,811,* Cl. 347-104.000.

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Matsumura, Yasuo; Serizawa, Manabu; Suwabe, Masaaki; Sato, Shuji; Kadokura, Yasuo; Morijiri, Hisao; Shoji, Takeshi; and Mizoguchi, Takahiro, 5,910,389, Cl. 430-111.000.

Satoh, Shigeki: *See*—
Aoki, Kazushige; Hamabe, Tutomu; Satoh, Shigeki; and Akatu, Yousuke, 5,910,993, Cl. 381-71.120.

Satoh, Takashi: *See*—
Niikura, Yasuhiro; Taniguchi, Yukinobu; Akutsu, Akihito; Tonomura, Yoshinobu; Satoh, Takashi; Shimizu, Atsushi; and Hamada, Hiroshi, 5,911,008, Cl. 382-236.000.

Satoh, Toshio; Ebata, Tetsuo; and Kosaka, Yasuo, to LTT Institute Co., Ltd.; and Kuree Co., Ltd. Antiallergic agent having an anti-oxidant action. 5,910,499, Cl. 514-255.000.

Satoshi, Umemoto: *See*—
Tugutaka, Ichikawa; and Satoshi, Umemoto, 5,909,886, Cl. 280-14.200.

Sauter, Hubert: *See*—
Schwalge, Barbara; Müller, Ruth; Bayer, Herbert; Sauter, Hubert; Ammermann, Eberhard; Lorenz, Gisela; and Strathmann, Siegfried, 5,910,500, Cl. 514-275.000.

Savino, Lawrence Annello: *See*—
Schmidt, Ronald James; and Savino, Lawrence Annello, 5,910,398, Cl. 430-510.000.

Sawada, Jiro: *See*—
Nishizawa, Hirotaka; Miura, Tomoyoshi; Anjou, Ichirou; Ishihara, Masamichi; Yamamura, Masahiro; Morita, Sadao; Araki, Takashi; Inoue, Kiyoshi; Sugano, Toshio; Kohara, Tetsuji; Yamada, Toshio; Sekine, Yasushi; Anata, Yoshiaki; Goto, Masakatsu; Kasai, Norihiko; Takeura, Shinobu; Tsukuda, Mutsuo; Yamaguchi, Yasunori; Sawada, Jiro; Iwai, Hidetoshi; Tsukui, Seiichiro; Kaji, Tadao; and Shiozawa, Noboru, 5,910,010, Cl. 438-15.000.

Sawahashi, Mamoru: *See*—
Shou, Guoliang; Zhou, Changming; Zhou, Xuping; Yamamoto, Makoto; Takatori, Sunao; Sawahashi, Mamoru; and Adachi, Fumiyuki, 5,910,948, Cl. 370-335.000.

Sawyer, Jason S.: *See*—
Fleisch, Jerome H.; Jackson, William T.; and Sawyer, Jason S., 5,910,505, Cl. 514-381.000.

Sayiner, Necip; and Soljanin, Emina, to Lucent Technologies Inc. Method of detecting DC-free sequences. 5,910,969, Cl. 375-341.000.

Scagnelli, John B.; and Fiscella, Joseph A., to Lottotron, Inc. Computerized lottery wagering system. 5,910,047, Cl. 463-17.000.

Scalise, Patrick A., to AWL Golf. Golf-swing practice device. 5,910,053, Cl. 473-257.000.

Schad, Robert Dietrich; and Romanski, Zbig, to Husky Injection Molding Systems. Sprue bar assembly for a stack mold. 5,910,327, Cl. 425-572.000.

Schade, Marco; Schmidt, Erwin; and Sumser, Siegfried, to Daimler-Benz AG. Exhaust gas turbocharger turbine for an internal combustion engine. 5,910,000, Cl. 415-158.000.

Schäfer, Karl-Heinz: *See*—
Hoppe, Gerd; Geissler, Alfred; and Schäfer, Karl-Heinz, 5,909,988, Cl. 409-198.000.

Schaffer, Daniel H., to Sun Microsystems, Inc. Method for generalized windows application install testing for use with an automated test tool. 5,911,041, Cl. 395-183.140.

Scheinin, Leena: *See*—
Tuompo, Helena; Wirtanen, Gun; Salo, Satu; Scheinin, Leena; Batsman, Ari; and Levo, Seija, 5,910,420, Cl. 435-18.000.

Schell, Brian A.; and Anderson, Charles C., to Eastman Kodak Company. Backing layer for motion picture film. 5,910,399, Cl. 430-517.000.

Schell, Brian A.: *See*—
Anderson, Charles C.; Schell, Brian A.; and DeLaura, Mario D., 5,910,401, Cl. 430-533.000.

Schell, David Allen: *See*—
Leyba, Todd; and Schell, David Allen, 5,911,045, Cl. 395-200.340.

Schell, Jozef: *See*—
Topfer, Reinhard; Martini, Norbert; and Schell, Jozef, 5,910,631, Cl. 800-298.000.

Schembri, Carol T., to Hewlett-Packard Company. Method and apparatus for mixing a thin film of fluid. 5,910,288, Cl. 422-102.000.

Scherr, Mark J. Candleforming method. 5,910,005, Cl. 431-126.000.

Scheule, Ronald K.: *See*—
Yew, Nelson S.; Cheng, Seng H.; Eastman, Simon J.; Marshall, John; Scheule, Ronald K.; Harris, David J.; Lee, Edward R.; and Siegel, Craig S., 5,910,487, Cl. 514-44.000.

Schieber, Richard H., to American Meter Company. Radial flow diaphragm valve. 5,909,747, Cl. 137-492.000.

Schiefloe, Jon Arne: *See*—
Johnsen, Audun; Ro, Ola; and Schiefloe, Jon Arne, 5,909,951, Cl. 362-111.000.

Schill, Albrecht Paul, to System 3R International AB. Pneumatic driven automatic chuck. 5,909,882, Cl. 279-4.040.

Schiraldi, David Anthony; and Kenvin, Jeffrey Charles, to HNA Holdings, Inc. Method of production of aromatic aldehydes catalyzed by triflic acid. 5,910,613, Cl. 568-428.000.

Schlachter, Werner: *See*—
Gerlach, Hans-Joachim; Will, Heinz Ronald; Waegner, Ralf; and Schlachter, Werner, 5,910,645, Cl. 177-1.000.

Schlamp, Hans, to Accumulata Verwaltungsgesellschaft mbH. Refrigerator with several lockable compartments. 5,910,163, Cl. 62-256.000.

Schlumberger Technology Corporation: *See*—
Becker, Arthur J.; and Wraight, Peter D., 5,910,654, Cl. 250-269.300.

Schmeer, Norbert: *See*—
Heinen, Ernst; Schmeer, Norbert; and Herbst, Werner, 5,910,310, Cl. 424-211.100.

Schmid, Rudolf: *See*—
Foricher, Joseph; and Schmid, Rudolf, 5,910,606, Cl. 562-495.000.

Schmidt, Donald L.; and Mussell, Robert D., to Dow Chemical Company, The. Multisolvent-based film-forming compositions. 5,910,532, Cl. 524-556.000.

Schmidt, Erwin: *See*—
Schade, Marco; Schmidt, Erwin; and Sumser, Siegfried, 5,910,000, Cl. 415-158.000.

Schmidt, Harald: *See*—
Loracks, Juergen; Pommeranz, Winfried; and Schmidt, Harald, 5,910,350, Cl. 428-71.000.

Schmidt, Helmut; Mennig, Martin; Jonschker, Gerhard; and Gerhard, Volker, to Institut für Neue Materialien gemeinnützige GmbH. Composite adhesive for optical and opto-electronic applications. 5,910,522, Cl. 523-168.000.

Schmidt, Ronald James; and Savino, Lawrence Annello, to Eastman Kodak Company. Photographic glass plates having antihalation underlayer. 5,910,398, Cl. 430-510.000.

Schmitt, Judith E.; and Buchalo, John E., to Motorola, Inc. On-board vehicle parking space finder service. 5,910,782, Cl. 340-995.000.

Schmitt, Robert J.: *See*—
Mozelack, Brian; Connor, Robert D.; and Schmitt, Robert J., 5,910,229, Cl. 156-458.000.

Schmitt, Ronald Frederick, to Northern Telecom Limited. Digital single-frequency tone detection in presence of aliases. 5,910,906, Cl. 364-724.090.

Schneider, Claus, to Océ Printing Systems GmbH. Method and apparatus for storing and rotating bit patterns. 5,910,794, Cl. 345-126.000.

Schneider Electric SA: *See*—
Tian, Simon; and Kasbarian, Jean-Marc, 5,910,875, Cl. 361-78.000.

Schoenherr, Michael; Ahlers, Juergen; and Buchert, Hermann, to BASF Aktiengesellschaft. Micropowders. 5,910,558, Cl. 528-125.000.

Schohe-Loop, Rudolf: *See*—
Mittendorf, Joachim; Fey, Peter; Junge, Bodo; Kaulen, Johannes; van Laak, Kai; Meier, Heinrich; and Schohe-Loop, Rudolf, 5,910,593, Cl. 546-278.400.

Schollenberger, Marlin Robert: *See*—
Fitz, Charles Edwin, Jr.; Schollenberger, Marlin Robert; and Folk, Kenneth Foster, 5,909,913, Cl. 29-753.000.

Scholz, Kathleen M.: *See*—
Baur, Kenneth C.; Scholz, Kathleen M.; Whary, William L.; and Henry, Rand, 5,909,989, Cl. 410-44.000.

Schöpf, Andreas: *See*—
Schrüfer, Andreas; Ittner, Walter; Svejkovsky, Reinhard; Schöpf, Andreas; and Ziegenbein, Dieter, 5,909,878, Cl. 277-398.000.

Schroeder, Richard F.: *See*—
Reimink, Matthew S.; Schroeder, Richard F.; Mirsch, M. William, II; and Girard, Michael J., 5,910,170, Cl. 623-2.000.

Schrüfer, Andreas; Ittner, Walter; Svejkovsky, Reinhard; Schöpf, Andreas; and Ziegenbein, Dieter, to Feodor Burgmann Dichtungswerke GmbH & Co. Mechanical face seal assembly. 5,909,878, Cl. 277-398.000.

Schubring, Adam Wade: *See*—
Lautzenhiser, Frans Peter; Isenberg, John Karl; Walsh, James Edward; and Schubring, Adam Wade, 5,910,334, Cl. 427-96.000.

Schuhbeck, Erwin: *See*—
Mautner, Konrad; and Schuhbeck, Erwin, 5,910,234, Cl. 203-18.000.

Schultheiss, Karl F., to Dopaco, Inc. Clamshell carton with partitions. 5,909,840, Cl. 229-120.170.

Schultz, Willard F., to B. Braun Medical Inc. Safety IV catheter guard. 5,910,132, Cl. 604-162.000.

Schulz, Horst; and Somschor, Bernd, to ZF Friedrichshafen AG. Planetary gear. 5,910,066, Cl. 475-336.000.

Schwalenberg, Daniel: *See*—
Munsche, Denis; and Schwalenberg, Daniel, 5,909,847, Cl. 239-116.000.

Schwalge, Barbara; Müller, Ruth; Bayer, Herbert; Sauter, Hubert; Ammermann, Eberhard; Lorenz, Gisela; and Strathmann, Siegfried, to BASF Aktiengesellschaft. Fungicidal mixtures of an oximether carboxylic acid amide with anilinopyrimidines. 5,910,500, Cl. 514-275.000.

Schwankhart, Gerhard. Process and apparatus for continuous production of length portions from a strand of fluid-absorbing material. 5,909,884, Cl. 28-118.000.

Schwartz, David C.; and Ungar, David M., to Sun Microsystems, Inc. Method and apparatus for optimizing the assignment of hash values to nodes residing in a garbage collected heap. 5,911,144, Cl. 707-206.000.

Schwindeman, James Anthony; Quirk, Roderic Paul; Kamienski, Conrad William, deceased (by Diane Buschke Kamienski, executrix), to FMC Corporation. Protected functionalized heterotelechelic polymers and processes for preparing the same. 5,910,547, Cl. 525-332.800.

SciMed Life Systems, Inc.: *See*—
Hastings, Roger N., 5,910,102, Cl. 600-3.000.

Scott, Andrew Maxwell; and Ridley, Kevin Dennis, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Laser amplifier. 5,910,857, Cl. 359-338.000.

Scragg, Robert A.: *See*—
McConnell, Peter R. H.; and Scragg, Robert A., 5,910,929, Cl. 367-96.000.

Scripps Research Institute, The: *See*—

Kent, Stephen Brian Henry; Milton, Saskia Charlotte Florence; and Milton, Raymond Cecil deLisle, 5,910,437, Cl. 435-212.000.

SDGI Holdings, Inc.: *See*—
Morrison, Matthew M.; Loveless, Eric A.; Brumfield, David L.; Barker, B. Thomas; Carroll, Catalina J.; Miller, David; and Petit, Dominique, 5,910,141, Cl. 606-61.000.

Seabra, Helio Lanfranchi, to Metalurgica Detroit S.A. Insert for locking a tube in a connection body. 5,909,902, Cl. 285-322.000.

Seagate Technology, Inc.: *See*—
Wang, Ling; Crane, Peter; and Zhang, Lei, 5,910,865, Cl. 360-103.000.

Sealwrap Systems LLC: *See*—
Mueller, Bernard K., 5,909,912, Cl. 29-446.000.

Seetharamulu, Peddaiahgari: *See*—
Hausheer, Frederick H.; Petluru, Pavankumar N.V.; Reddy, Dasharatha; Murali, Dhanabalan; Haridas, Kochat; Seetharamulu, Peddaiahgari; and Yao, Shijie, 5,910,491, Cl. 514-63.000.

Segawa, Takeo, to Oiles Corporation. Composition for sliding member as well as sliding member and spherical annular seal member formed of the composition. 5,909,881, Cl. 277-627.000.

Seibring, Joachim: *See*—
McKee, Graham Edmund; Moors, Rainer; Gausepohl, Hermann; and Seibring, Joachim, 5,910,553, Cl. 526-319.000.

Seidler, Jack: *See*—
Gulachenski, Alan M.; Praino, Joseph; and Seidler, Jack, 5,910,885, Cl. 361-774.000.

Seifert, Franz: *See*—
Bulst, Wolf-Eckhart; Ruppel, Clemens; Reindl, Leonhard; and Seifert, Franz, 5,910,779, Cl. 340-825.540.

Seikagaku Kogyo Kabushiki Kaisha: *See*—
Habuchi, Osami; and Fukuta, Masakazu, 5,910,581, Cl. 536-23.200.

Seiko Epson Corporation: *See*—
Fukasawa, Shigenori; Isono, Masahiro; Kawakami, Kazuhisa; Mochizuki, Seiji; Takahashi, Nobuhito; and Kobayashi, Atsushi, 5,910,808, Cl. 347-30.000.
Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,910,809, Cl. 347-72.000.
Yajima, Akitaka; Fujimori, Motoyuki; Furuhata, Mutsuya; Ushiyama, Tomiyoshi; Koide, Terunaga; Hashizume, Toshiaki; Miyashita, Kiyoshi; Harima, Hiroshi; and Naito, Keijiro, 5,909,944, Cl. 353-81.000.

Seitz, Karl: *See*—
Brenner, Kurt; Seitz, Karl; Ahnelt, Peter; Roth, Roland; and Dominicus, Walter, 5,909,938, Cl. 33-503.000.

Seki, Yukuharu; and Kato, Toshihide, to Mitsubishi Heavy Industries, LTD. Stuck sheet material manufacturing system equipped with pressure device. 5,910,230, Cl. 156-470.000.

Sekiguchi, Kazuhiro: *See*—
Tanaka, Yasuyuki; Nakade, Shinichi; Ochi, Atsuko; Sakaki, Toshiaki; Hayashi, Masaharu; Sekiguchi, Kazuhiro; Kuga, Akihito; and Kanamaru, Eiji, 5,910,567, Cl. 528-491.000.

Sekiguchi, Tomonori; Fujisawa, Hiroki; Sakata, Takeshi; Kawahara, Takayuki; and Kimura, Katsutaka, to Hitachi, Ltd. Semiconductor memory and process of operating the same. 5,910,911, Cl. 365-145.000.

Sekine, Kazutoyo; and Lotocky, Dan, to Sony Corporation; and Sony Trans Com Inc. Apparatus and method for maintaining data transfer. 5,910,966, Cl. 375-259.000.

Sekine, Yasushi: *See*—
Nishizawa, Hirotaka; Miura, Tomoyoshi; Anjou, Ichirou; Ishihara, Masamichi; Yamamura, Masahiro; Morita, Sadao; Araki, Takashi; Inoue, Kiyoshi; Sugano, Toshio; Kohara, Tetsuji; Yamada, Toshio; Sekine, Yasushi; Anata, Yoshiaki; Goto, Masakatsu; Kasai, Norihiko; Takeura, Shinobu; Tsukuda, Mutsuo; Yamaguchi, Yasunori; Sawada, Jiro; Iwai, Hidetoshi; Tsukui, Seiichiro; Kaji, Tadao; and Shiozawa, Noboru, 5,910,010, Cl. 438-15.000.

Sekiya, Naohide: *See*—
Nishimura, Takashi; Sekiya, Naohide; Kimura, Takeshi; Inoue, Hideki; Nagano, Hiroshi; and Taoka, Ikuo, 5,910,955, Cl. 370-401.000.

Sell, William D.: *See*—
Ray, Bradley R.; and Sell, William D., 5,910,388, Cl. 430-110.000.

Selton, Daniel E. Therapeutic bedding pad. 5,910,080, Cl. 5-652.000.

Selwood, Alan: *See*—
Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,910,346, Cl. 428-36.900.

Senior, Richard C.; Smalley, Christopher G.; and Holtan, Timothy P., to Mobil Oil Corporation. FCC unit catalyst stripper. 5,910,240, Cl. 208-113.000.

Senius, James D.: *See*—
Grossman, Matthew J.; Siskin, Michael; Ferrughelli, David T.; Lee, M. Kathryn; and Senius, James D., 5,910,440, Cl. 435-282.000.

Sensor Adaptive Machines, Inc.: *See*—
Pryor, Timothy R., 5,910,894, Cl. 364-468.010.

Seok, Jin-oh; and Jung, Bong-cheon, to Samsung Electronics Co., Ltd. Method and apparatus for turning on and off a lamp in a refrigerator. 5,909,950, Cl. 362-94.000.

Serizawa, Manabu: *See*—
Matsumura, Yasuo; Serizawa, Manabu; Suwabe, Masaaki; Sato, Shuji; Kadokura, Yasuo; Morijiri, Hisao; Shoji, Takeshi; and Mizoguchi, Takahiro, 5,910,389, Cl. 430-111.000.

Serrels, Dana Michael: *See*—
Foster, Michael Ralph; Vaneman, Gerald Leroy; Heather, Jesse Allan; Serrels, Dana Michael; and Chen, David Kwo-Shyong, 5,909,916, Cl. 29-890.000.

Seybert, Steven Roy: *See*—
Skirha, Martin Dirk; Ambler, Cliff George; Nyberg, William Alan; Bronnenberg, Nicky Marion; Snyder, Kelly Joe; and Seybert, Steven Roy, 5,909,957, Cl. 362-546.000.

Shaffer, Danny Craig. Tool for attaching and removing T-post clips. 5,909,910, Cl. 29-243.560.

Shaffer, James D.; and Moore, George G., to Murex Securities, Ltd. Automatic routing and information system for telephonic services. 5,910,982, Cl. 379-220.000.

Shaffer, Shmuel; Beyda, William J.; and Dang, Mieu-Hong, to Siemens Information and Communications Networks, Inc. System and method for providing wireless connections for single-premises digital telephones. 5,911,123, Cl. 455-554.000.

Shah, Gautam P., to Cryovac, Inc. Moisture barrier film. 5,910,374, Cl. 428-474.400.

Shah, Kishore: *See*—
Kydonieus, Agis; Shah, Kishore; and Nathan, Aruna, 5,910,536, Cl. 524-590.000.

Shah, Lacky V.: *See*—
Mattson, James S., Jr.; Shah, Lacky V.; and Buzbee, William B., 5,911,073, Cl. 395-701.000.

Sharma, Dinesh; Clark, Gordon R.; and Alton, Lawrence E., to Compaq Computer Corporation. Printed circuit board having conductors which can be decoupled for isolating intactive integrated circuits connected thereto. 5,910,876, Cl. 361-86.000.

Sharma, Sudhir; Runas, Michael E.; and Nally, Robert M., to Cirrus Logic, Inc. Circuits, systems and methods for modifying data stored in a memory using logic operations. 5,910,919, Cl. 365-189.050.

Sharp Kabushiki Kaisha: *See*—
Hirano, Yasuaki, 5,910,918, Cl. 365-189.010.
Hsu, Sheng Teng; Fujii, Katsumasa; Kawazoe, Hidechika; and Lee, Jong Jan, 5,910,673, Cl. 257-355.000.
Shimada, Takayuki; Kanemori, Yuzuru; Katayama, Mikio; Tanaka, Shinya; and Kubo, Masumi, 5,910,829, Cl. 349-110.000.
Tamagaki, Akira, 5,910,849, Cl. 358-442.000.

Sharp Microelectronics Technology, Inc.: *See*—
Hsu, Sheng Teng; Fujii, Katsumasa; Kawazoe, Hidechika; and Lee, Jong Jan, 5,910,673, Cl. 257-355.000.

Shastry, Sushil: *See*—
Vaidyanathan, Sriam; Kanuit, Christopher; Kocecski, Slavko; and Shastry, Sushil, 5,909,866, Cl. 248-429.000.

Shaver, Robert L.; Kafka, Alfred J.; and Carey, Matthew C., to Jervis B. Webb Company. Unit product loading and discharge system. 5,909,798, Cl. 198-603.000.

Shaw-Klein, Lori Jeanne: *See*—
Gardner, Sylvia Alice; Shaw-Klein, Lori Jeanne; and Brady, Brian Kenneth, 5,910,385, Cl. 430-62.000.

Shea, Lawrence E., to Shea Technology. Flange joint assemblies. 5,909,904, Cl. 285-405.000.

Shea Technology: *See*—
Shea, Lawrence E., 5,909,904, Cl. 285-405.000.

Shear, Victor H.: *See*—
Ginter, Karl L.; Shear, Victor H.; Spahn, Francis J.; and Van Wie, David M., 5,910,987, Cl. 380-24.000.

Sheehan, Richard W., to Absorbent Paper Company, Inc. Particulate absorbent material from waste paper. 5,909,718, Cl. 119-172.000.

Shell Oil Company: *See*—
Hendriks, Henricus Engelbertus Johannes; and Stoker, Dirk Adriaan, 5,910,212, Cl. 106-281.100.
McNamara, David John; and Stork, Willem Hartman Jurriaan, 5,910,241, Cl. 208-251.00H.
Murata, Yasuyuki; Tohriiwa, Norio; and Nakanishi, Yoshinori, 5,910,548, Cl. 525-438.000.
St. Clair, David John; and Erickson, James Robert, 5,910,541, Cl. 525-99.000.
St. Clair, David John; and Erickson, James Robert, 5,910,542, Cl. 525-99.000.

Shelnut, James G., to Shipley Company, L.L.C. I-line photoresist compositions. 5,910,394, Cl. 430-280.100.

Shelton, David L.: *See*—
Presta, Leonard G.; Shelton, David L.; and Urfer, Roman, 5,910,574, Cl. 530-388.220.

Shen, Hong Yuan; Zeng, Rui Rong; Zhou, Yu Ping; Yu, Gui Fang; Huang, Cheng Hui; Zeng, Zheng Dong; Lin, Wen Xiong; and Wu, Rui Fen, to Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences. Laser medical device. 5,910,140, Cl. 606-3.000.

Shen, Jian, to Ortho Diagnostic Systems, Inc. Detecting abnormal reactions in a red blood cell agglutination. 5,911,000, Cl. 382-134.000.

Shen, Tsae-Pyng Janice: *See*—
Rogovin, Daniel; Shen, Tsae-Pyng Janice; and Fisher, Yuval, 5,910,793, Cl. 345-100.000.

Sherwin-Williams Company, The: *See*—
Rossi, Louis P.; and Hemsarth, W. Lance H., 5,909,753, Cl. 141-330.000.

Shi, Rui-Fang: *See*—
Garito, A. F.; Shi, Rui-Fang; Koeppen, Chris; and Chen, Weidong, 5,911,025, Cl. 385-127.000.

Shi, Yuan: *See*—
Pan, Jing-Jong; and Shi, Yuan, 5,910,962, Cl. 372-6.000.

Shiba, Katsuhiro; Gotoh, Minoru; Watanabe, Masatoshi; Kakuta, Yoshiyuki; and Okuda, Kenji, to Pioneer Electronic Corporation. Automatic disc changer for an information recording or reproducing system. 5,910,939, Cl. 369-178.000.

Shibata, Koji: *See*—
Nishi, Kenichiro; Nagai, Satoshi; Eguchi, Kentaro; Arai, Takeshi; Bunya, Jun; Shimizu, Kazutaka; Shibata, Koji; and Ogawa, Isamu, 5,910,713, Cl. 315-308.000.

Shichimiya, Shoichi: *See*—
Kobayashi, Kei-Ichiro; Kato, Tomoaki; Takada, Yoshio; Wada, Osamu; Kobayashi, Masahiro; Furuse, Naomi; Fujiwara, Yukio; Shichimiya, Shoichi; and Ishibe, Shinji, 5,910,761, Cl. 338-21.000.

Shieber, Stuart Merrill: *See*—
Johari, Ramesh; Marks, Joseph; Partovi, Ali; and Shieber, Stuart Merrill, 5,911,146, Cl. 707-525.000.

Shields, Kevin Timothy; and Goldberg, Jossef, to Microsoft Corporation. Usage tips for on-screen touch-sensitive controls. 5,910,800, Cl. 345-336.000.

Shields, Kevin Timothy; Manning, Raymond A.; and Kitowitz, Anthony, to Microsoft Corporation. Operating system for handheld computing device having taskbar auto hide. 5,910,802, Cl. 345-347.000.

Shiell, Jonathan H., to Texas Instruments Incorporated. Superscalar microprocessor having combined register and memory renaming circuits, systems, and methods. 5,911,057, Cl. 395-393.000.

Shiga, Kiyotaka; Fukui, Akio; Terada, Kazuaki; Yamada, Takahiro; Toyoda, Haruyasu; Miyake, Masashi; and Umeda, Akihiro, to Fuji Seiko Limited. Drill having plate-like cutter member fixed at proximal end to shank and having cutting edge at distal portion. 5,909,985, Cl. 408-1.00R.

Shih, Chun-Hsing: *See*—
Kang, Tzong-Kuei; Cheng, Huang-Chung; Shih, Chun-Hsing; and Peng, Chun-Hung, 5,910,452, Cl. 438-710.000.

Shih, Yuan-Chang. Secure open showcase for products suitable for display in a hanging manner. 5,909,932, Cl. 312-135.000.

Shikano, Kazunori: *See*—
Ogawa, Yoshinori; Sasaki, Yuji; Yoshida, Mitsuaki; Shikano, Kazunori; and Ishikawa, Masato, 5,910,862, Cl. 360-97.010.

Shiki, Eiichi: *See*—
Kanda, Ryoichi; and Shiki, Eiichi, 5,910,118, Cl. 600-455.000.

Shima, Kensuke, to Jefcom Co., Ltd. Fluorescent lighting fixture. 5,909,953, Cl. 362-260.000.

Shima, Satoshi: *See*—
Kasashima, Masaki; Hamaya, Noriaki; Shinya, Naofumi; and Shima, Satoshi, 5,910,379, Cl. 429-59.000.

Shimada, Kenzo: *See*—
Iida, Tetsuo; Shimada, Kenzo; and Maeda, Joji, 5,910,091, Cl. 56-16.700.

Shimada, Takayuki; Kanemori, Yuzuru; Katayama, Mikio; Tanaka, Shinya; and Kubo, Masumi, to Sharp Kabushiki Kaisha. Liquid crystal display device. 5,910,829, Cl. 349-110.000.

Shimada, Tomoyuki: *See*—
Adachi, Chihaya; Sasaki, Masaomi; Nagai, Kazukiyo; Shimada, Tomoyuki; Tanaka, Chiaki; Tamoto, Nozomu; Katayama, Akira; Anzai, Mitsutoshi; Imai, Akihiro; and Morooka, Katsuhiro, 5,910,561, Cl. 528-196.000.

Shimada, Yozo: *See*—
Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,910,809, Cl. 347-72.000.

Shimano Inc.: *See*—
Okajima, Shinpei, 5,909,946, Cl. 36-50.100.
Tabe, Koshi, 5,909,931, Cl. 301-110.500.

Shimizu, Atsushi: *See*—
Niikura, Yasuhiro; Taniguchi, Yukinobu; Akutsu, Akihito; Tonomura, Yoshinobu; Satoh, Takashi; Shimizu, Atsushi; and Hamada, Hiroshi, 5,911,008, Cl. 382-236.000.

Shimizu, Isamu: *See*—
Hirooka, Masaaki; Ogawa, Kyosuke; Ishihara, Shunichi; and Shimizu, Isamu, 5,910,342, Cl. 427-573.000.

Shimizu, Kazuharu: *See*—
Matsuhisa, Yoji; Kobayashi, Masanobu; Okuda, Akira; and Shimizu, Kazuharu, 5,910,456, Cl. 442-179.000.

Shimizu, Kazutaka: *See*—
Nishi, Kenichiro; Nagai, Satoshi; Eguchi, Kentaro; Arai, Takeshi; Bunya, Jun; Shimizu, Kazutaka; Shibata, Koji; and Ogawa, Isamu, 5,910,713, Cl. 315-308.000.

Shimizu, Koichiro: *See*—
Uchida, Hiroki; Kiso, Masayuki; Nakamura, Takayuki; Kamitamari, Tohru; Susuki, Rumiko; and Shimizu, Koichiro, 5,910,340, Cl. 427-437.000.

Shimizu, Kyoichi; Maruyama, Toshihiro; and Kizuki, Takafumi, to Victor Company of Japan, Ltd. Audio signal compression and decompression utilizing amplitude, frequency, and time information. 5,911,130, Cl. 704-500.000.

Shimizu, Satoshi: *See*—
Yamashita, Tomohiro; and Shimizu, Satoshi, 5,911,103, Cl. 438-199.000.

Shimizu, Syozo: *See*—
Takahashi, Shoji; Shimizu, Syozo; and Shimodaira, Kenichi, 5,911,102, Cl. 419-38.000.

Shimizu, Tamotsu: *See*—
Gyotoku, Eiji; and Shimizu, Tamotsu, 5,911,098, Cl. 399-264.000.

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Shimizume, Kazutoshi, to Sony Corporation. Disc reproducing apparatus and method with adjustment of rotation speed between read positions. 5,910,934, Cl. 369-50.000.

Shimoda, Kenji: *See*—
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Shimura, Kazuo: *See*—
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Shin-Etsu Chemical Co., Ltd.: *See*—
Kasashima, Masaki; Hamaya, Noriaki; Shinya, Naofumi; and Shima, Satoshi, 5,910,379, Cl. 429-59.000.

Shin-Etsu Handotai Co., Ltd.: *See*—
Nakamura, Yasushi; and Otsuka, Seiichiro, 5,910,216, Cl. 117-218.000.

Shin, Sang Seok: *See*—
Moh, Sang Man; Shin, Sang Seok; Yoon, Suk Han; and Rim, Kee Wook, 5,910,178, Cl. 709-232.000.

Shinohe, Takashi; Yamaguchi, Masakazu; and Hoshi, Kimihiro, to Kabushiki Kaisha Toshiba. Driving circuit for driving a semiconductor device at high speed and method of operating the same. 5,910,738, Cl. 327-108.000.

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Tsukamoto, Katsuro; and Ishikawa, Susumu, 5,910,377, Cl. 428-609.000.

Shinya, Naofumi: *See*—
Kasashima, Masaki; Hamaya, Noriaki; Shinya, Naofumi; and Shima, Satoshi, 5,910,379, Cl. 429-59.000.

Shiode, Tetsuo: *See*—
Hase, Yoshihiko; Morotomi, Hidetoshi; Okamoto, Hiromi; Komura, Syoji; Takigawa, Yasuyuki; Hirano, Shigeyuki; and Shiode, Tetsuo, 5,910,383, Cl. 429-231.400.

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Kitamura, Kazuo; Kangawa, Kenji; Matsuo, Hisayuki; and Eto, Tanenao, 5,910,416, Cl. 435-7.100.
Sugimoto, Hirohiko; and Fujiwara, Tamio, 5,910,506, Cl. 514-397.000.

Shiozawa, Noboru: *See*—
Nishizawa, Hirotaka; Miura, Tomoyoshi; Anjou, Ichirou; Ishihara, Masamichi; Yamamura, Masahiro; Morita, Sadao; Araki, Takashi; Inoue, Kiyoshi; Sugano, Toshio; Kohara, Tetsuji; Yamada, Toshio; Sekine, Yasushi; Anata, Yoshiaki; Goto, Masakatsu; Kasai, Norihiko; Takeura, Shinobu; Tsukuda, Mutsuo; Yamaguchi, Yasunori; Sawada, Jiro; Iwai, Hidetoshi; Tsukui, Seiichiro; Kaji, Tadao; and Shiozawa, Noboru, 5,910,010, Cl. 438-15.000.

Shipley Company, L.L.C.: *See*—
Shelnut, James G., 5,910,394, Cl. 430-280.100.

Shirota, Koromo: *See*—
Yamamoto, Tomoya; Haruta, Masahiro; Koike, Shoji; Shirota, Koromo; Takaide, Aya; and Suzuki, Mariko, 5,910,812, Cl. 347-106.000.

Shkolnikov, Yury; and Deieso, Tony, to Illinois Tool Works Inc. Combustion powered tool with combustion chamber lockout. 5,909,836, Cl. 227-8.000.

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Thoen, Johan A.; Suh, Kyung W.; Kennedy, James G.; and Shmidt, Creston D., 5,910,358, Cl. 428-316.600.

Shockey, David R.: *See*—
Lawrence, Paul J.; Ly, Peter U.; and Shockey, David R., 5,910,447, Cl. 436-111.000.

Shoemaker, Craig: *See*—
Jager, Willem; Barth, Roland Peter; and Shoemaker, Craig, 5,909,960, Cl. 37-235.000.

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Shofner, Frederick M.; and Roeder, Dennis J., 5,910,598, Cl. 55-385.200.

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Short, Michael L.; Bornhorst, John B.; Daniel, Eward A.; and Homan, Dale A., to Minster Machine Company, The. Vacuum seal for slide guiding. 5,909,705, Cl. 100-214.000.

Shou, Guoliang; Zhou, Changming; Zhou, Xuping; Yamamoto, Makoto; Takatori, Sunao; Sawahashi, Mamoru; and Adachi, Fumiyuki, to NTT Mobile Communications Network, Inc.; and YOZAN Inc. Acquisition scheme and receiver for an asynchronous DS-CDMA cellular communication system. 5,910,948, Cl. 370-335.000.

Shroot, Braham: *See*—
Thoreau, Etienne; and Shroot, Braham, 5,910,508, Cl. 514-432.000.

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Jain, Ramesh; Horowitz, Bradley; Fuller, Charles E.; Gupta, Amarnath; Bach, Jeffrey R.; and Shu, Chiao-fe, 5,911,139, Cl. 707-3.000.

Shulman, Jan Edward: *See*—

Freeman, Michael Bennett; Larson, Gary Robert; Merritt, Richard Foster; Paik, Yi Hyon; Shulman, Jan Edward; Swift, Graham; and Wilczynski, Robert, 5,910,531, Cl. 524-556.000.

Shvetsov, Ivan K.: *See*—
Ponomarev-Stepnoy, Nikolai N.; Pavshook, Vladimir A.; Bebikh, Grigoriy F.; Khvostionov, Vladimir Ye.; Trukhlyaev, Peter S.; and Shvetsov, Ivan K., 5,910,971, Cl. 376-189.000.

SIBIA Neurosciences, Inc.: *See*—
Elliott, Kathryn J.; Ellis, Steven B.; and Harpold, Michael M., 5,910,582, Cl. 536-23.500.

Sicom, Inc.: *See*—
Vanderaar, Mark J., 5,910,967, Cl. 375-265.000.

Siedlik, Henry Anthony; Hotra, Zenon; and Gniewek, Michael Jerome, to UT Automotive Dearborn, Inc. Two-piece battery terminal shield. 5,910,029, Cl. 439-522.000.

Siegel, Craig S.: *See*—
Yew, Nelson S.; Cheng, Seng H.; Eastman, Simon J.; Marshall, John; Scheule, Ronald K.; Harris, David J.; Lee, Edward R.; and Siegel, Craig S., 5,910,487, Cl. 514-44.000.

Siegfried, Norman D.: *See*—
An, Suk Ku; Siegfried, Norman D.; and Adkinson, Brian L., 5,909,709, Cl. 101-405.000.

Siemens Aktiengesellschaft: *See*—
Biebl, Markus, 5,911,157, Cl. 73-514.160.
Bulst, Wolf-Eckhart; Ruppel, Clemens; Reindl, Leonhard; and Seifert, Franz, 5,910,779, Cl. 340-825.540.
Kuhn, Helmut; Doerfler, Walter; Loew, Gerhard; and Ciolek, Bernhard, 5,910,974, Cl. 378-138.000.
Lips, Hans-Peter, 5,910,683, Cl. 257-723.000.
Plickert, Volker; and Kropp, Jörg-R., 5,911,022, Cl. 385-49.000.

Siemens Canada Limited: *See*—
Balsdon, David W.; and Busato, Murray F., 5,909,725, Cl. 123-516.000.

Siemens Energy & Automation, Inc.: *See*—
Passow, Christian Henry, 5,910,759, Cl. 335-78.000.

Siemens Information and Communication Networks, Inc.: *See*—
Fenn, Thomas; and Carey, Brian Robert, 5,910,985, Cl. 379-382.000.

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Shaffer, Shmuel; Beyda, William J.; and Dang, Mieu-Hong, 5,911,123, Cl. 455-554.000.

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Nock, Levin F.; Friemel, Barry; Sutcliffe, Patrick L.; Tirumalai, Arun P.; and Weng, Lee, 5,910,114, Cl. 600-437.000.

Sierra Applied Sciences, Inc.: *See*—
Coleman, Charles, 5,910,886, Cl. 363-17.000.

Sigal, Leon Jacob, to International Business Machines Corporation. Digital circuit noise margin improvement. 5,910,730, Cl. 326-24.000.

Sigma Tool & Machine: *See*—
Leistner, Walter H., 5,909,993, Cl. 411-442.000.

Signal Pharmaceuticals, Inc.: *See*—
Barbosa, Miguel S.; and Wu, Jun, 5,910,411, Cl. 435-6.000.

Silberman, Joel Abraham: *See*—
Dhong, Sang Hoo; Emma, Philip George; Reohr, William Robert; and Silberman, Joel Abraham, 5,911,153, Cl. 711-218.000.

Silicon Storage Technology, Inc.: *See*—
Wang, Ping, 5,910,914, Cl. 365-185.210.

Silicon Valley Chemlabs, Inc.: *See*—
Sahbari, Javad J., 5,909,744, Cl. 134-38.000.

Siliconix incorporated: *See*—
Chang, Mike F.; Hshieh, Fwu-Iuan; Kwan, Sze-Hon; and Owyang, King, 5,910,669, Cl. 257-339.000.

Silmag: *See*—
Fedeli, Jean-Marc, 5,910,869, Cl. 360-113.000.

Simon, Ethan Scott: *See*—
Mattox, John Robert; Simon, Ethan Scott; and Petigara, Ramesh Balubhai, 5,910,503, Cl. 514-372.000.

Simon, Joachim; Henne, Andreas; and Lingk, Heinz, to BASF Aktiengesellschaft. Preparation of anhydrous 2-amino-1-methoxypropane. 5,910,612, Cl. 564-497.000.

Simon, Ulrich, to Carl Zeiss Jena GmbH. Laser resonator design with improved signal-to-noise level (S/N) at the output of a single-mode fiber-coupled multi-wavelength laser providing illumination for a laser scanning microscope. 5,910,963, Cl. 372-98.000.

Simonyi, Charles, to Microsoft Corporation. Method and system for reducing an intentional program tree represented by high-level computational constructs. 5,911,072, Cl. 395-701.000.

Simpelkamp, Jörg: *See*—
Grüning, Burghard; Rau, Harald; Simpelkamp, Jörg; and Weitemeyer, Christian, 5,910,564, Cl. 528-310.000.

Simpson, Gary R.; Eisenhart, Robert L.; Szendrenyi, Bela B.; and Maury, Richard J., to Maury Microwave, Inc. Reduced height waveguide tuner for impedance matching. 5,910,754, Cl. 333-17.300.

Simpson, James E., to Fusion Lighting, Inc. Method and apparatus for powering an electrodeless lamp with reduced radio frequency interference. 5,910,710, Cl. 315-248.000.

Simpson, Joycelyn O.; and St. Clair, Terry L., to United States of America, National Aeronautics and Space Administration. Method of making thermally stable, piezoelectric and proelectric polymeric substrates. 5,909,905, Cl. 29-25.350.

Simpson, Matthew A., to Norton Company. Diamond film coating for mating parts. 5,909,879, Cl. 277-399.000.

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Pawlowski, Stephen S.; MacWilliams, Peter D.; and Singh, Gurbir, 5,911,053, Cl. 395-307.000.

Singhal, Ashok; Liencres, Bjorn; Price, Jeff; Cerauskis, Frederick M.; Broniarczyk, David; Cheung, Gerald; Hagersten, Erik; and Agarwal, Nalini, to Sun Microsystems, Inc. Split transaction snooping bus protocol. 5,911,052, Cl. 395-293.000.

Sinha, Rajeev Ranjan: *See*—
Garza, Jose Arturo; Kent, Dales Morrison; Ramirez, Ciro Neal; and Sinha, Rajeev Ranjan, 5,910,884, Cl. 361-690.000.

Siskin, Michael: *See*—
Grossman, Matthew J.; Siskin, Michael; Ferrughelli, David T.; Lee, M. Kathryn; and Senius, James D., 5,910,440, Cl. 435-282.000.

Sitte, Werner: *See*—
Maier, Joachim; Sitte, Werner; and Holzinger, Michael, 5,910,239, Cl. 205-781.000.

Siwinski, Michael J., to Eastman Kodak Company. Ink ribbon cartridge with an elliptical take-up spool. 5,909,973, Cl. 400-208.000.

Skalla, Randy Marc; Ahrens, Carl Austin; Garner, Robert Keith, Jr.; and Wilkinson, Bradley Carl, to EnviroSurgical, Inc. Surgery plume filter device and method of filtering. 5,910,291, Cl. 422-171.000.

Skatrud, Paul Luther; Peery, Robert Brown; and Treadway, Patti Jean, to Eli Lilly and Company. *Streptococcus pneumoniae* gene sequence HI1648. 5,910,580, Cl. 536-22.100.

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Rosenburg, Bryan Savoye; Roth, Tova; Skelton, Michael Hadley; and Summers, James Hoyet, 5,910,801, Cl. 345-339.000.

Skilling, John, to MaxEnt Solutions Ltd. Reducing interferences in elemental mass spectrometers. 5,910,655, Cl. 250-281.000.

Skirha, Martin Dirk; Ambler, Cliff George; Nyberg, William Alan; Bronnenberg, Nicky Marion; Snyder, Kelly Joe; and Seybert, Steven Roy, to Guide Corporation. Sealed vehicle lamp and assembly method therefor. 5,909,957, Cl. 362-546.000.

Slavin, Keith R., to Tektronix, Inc. Fir filter for programmable decimation. 5,910,908, Cl. 364-724.100.

Slemon, Charles S.; Lafferty, William Michael; and Guest, Clark C., to Advanced Optical Controls, Inc. Sensor module. 5,910,765, Cl. 340-517.000.

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Malingowski, Richard P.; Lathrop, Todd M.; Slepian, Robert M.; McKee, Jere L.; Gula, Lance; and Whitaker, Thomas A., 5,910,760, Cl. 335-167.000.

Sliger, William A. Starter tube for use in vitrification process. 5,910,093, Cl. 588-253.000.

SLM Schweizerische Lokomotiv - Und Maschinenfabrik AG: *See*—
Vogel, Hans Heiner; and Kägi, Hans-Rudolf, 5,909,711, Cl. 105-168.000.

Sloane, Neil James Alexander, to Lucent Technologies Inc. Method using central epidemiological database. 5,911,132, Cl. 705-3.000.

Small, Parker A., Jr.; and Huang, Shih-Wen, to University of Florida. Rapid diagnostic method for distinguishing allergies and infections. 5,910,421, Cl. 435-19.000.

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Senior, Richard C.; Smalley, Christopher G.; and Holtan, Timothy P., 5,910,240, Cl. 208-113.000.

Smart Link Ltd.: *See*—
Maytal, Benjamin; and Lezerovitz, Aryeh, 5,910,978, Cl. 379-93.010.

Smayling, Michael C.; Parker, Ronald N.; Torreno, Manuel L., Jr., deceased (by Arlene K. Torreno, legal representative), to Texas Instruments Incorporated. Integrated circuit combining high frequency bipolar and high power CMOS transistors. 5,911,104, Cl. 438-202.000.

Smid, Jan Douglas: *See*—
Egan, Patrick Kevin; and Smid, Jan Douglas, 5,911,050, Cl. 395-280.000.

Smigla, Terrence R.: *See*—
Garrison, Arthur L.; Smigla, Terrence R.; and Stephens, Scott A., 5,910,945, Cl. 370-324.000.

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Smith, Dennis Dee: *See*—
Kean, Tod Mitchell; Kean, Michael James; and Smith, Dennis Dee, 5,910,367, Cl. 428-393.000.

Smith, Gregory M.: *See*—
Jones, Paul D.; Malpass, Dennis B.; and Smith, Gregory M., 5,910,270, Cl. 252-182.300.

Smith, James I.: *See*—
Castonguay, Roger N.; and Smith, James I., 5,910,650, Cl. 200-400.000.

Smith, John Ralph, to Decora, Incorporated. Water based coating composition having sacrificial layer for stain removal. 5,910,535, Cl. 524-588.000.

Smith, Judy A.: *See*—
Greenberg, Lee M.; and Smith, Judy A., 5,910,514, Cl. 521-40.500.

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Daniels, Mark; Smith, Pam; McPhilliamy, Steve; VanAkkeren, John; Johnston, Damon; and Jaron, Mike, 5,909,936, Cl. 312-334.100.

Smith, Samuel J. Utility bag for sports gear. 5,909,833, Cl. 224-577.000.

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SmithKline Beecham Corporation: *See*—
Bergsma, Derk J.; and Ellis, Catherine E., 5,910,430, Cl. 435-69.100.

Gwynn, Michael N.; and Kallender, Howard, 5,910,414, Cl. 435-6.000.
Wallis, Nicola Gail, 5,910,572, Cl. 530-350.000.

SmithKline Beecham p.l.c.: *See—*
Hanson, John Christopher, 5,910,589, Cl. 544-277.000.
Rivett, Ernest Lionel Gilbert; Grimmett, Francis Walter; and Hartnell, Michael William, 5,910,322, Cl. 424-484.000.
Wallis, Nicola Gail, 5,910,572, Cl. 530-350.000.

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Pool, Colin Ripley; Roman, Robin Sherwood; Brightwell, Malcolm David; and Tremper, Alan William, 5,910,592, Cl. 546-269.700.

SMS Schloemann-Siemag Aktiengesellschaft: *See—*
Kneppe, Günter; Rosenthal, Dieter; and Krämer, Stephan, 5,910,184, Cl. 72-201.000.

Snelling, Jeff; and Borg, Russel Axel, Jr., to Hoshizaki America, Inc. Ice cube dispenser for compressed flaked ice cubes. 5,910,164, Cl. 62-344.000.

Snyder, Kelly Joe: *See—*
Skirtha, Martin Dirk; Ambler, Cliff George; Nyberg, William Alan; Bronnenberg, Nicky Marion; Snyder, Kelly Joe; and Seybert, Steven Roy, 5,909,957, Cl. 362-546.000.

So, Hong Seob: *See—*
Cho, Joong Myung; Choi, Deog Young; Kim, Chun Hyung; So, Hong Seob; Yang, Jae Young; Kim, In Soo; and Kim, Joo Ho, 5,910,405, Cl. 435-5.000.

Soble, Jeffrey Scott, to Rush-Presbyterian -St. Luke's Medical Center. User interface for echocardiographic report generation. 5,911,133, Cl. 705-3.000.

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Lecomte, Loic; Metge, Serge; and Souyri, Denis, 5,910,617, Cl. 570-261.000.

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Solenberger, Stephen D., to Nellcor Puritan Bennett Incorporated. Method and apparatus for improving the durability of a sensor. 5,910,108, Cl. 600-310.000.

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Solstad, Vidar: *See—*
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Somschor, Bernd: *See—*
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Sones, Richard A., to Pressco Technology Inc. Color pattern evaluation system for randomly oriented articles. 5,911,003, Cl. 382-162.000.

Song, Chi-Jung, to LG Semicon Co., Ltd. Semiconductor chip stack package. 5,910,682, Cl. 257-685.000.

Sonic Systems Corporation: *See—*
McConnell, Peter R. H.; and Scragg, Robert A., 5,910,929, Cl. 367-96.000.

Sonobe, Hideki: *See—*
Hira, Yasuo; Toba, Tamaki; Imayama, Hirotaka; Ohkawa, Atsuko; Fujisawa, Masayasu; Nate, Kazuo; Sonobe, Hideki; Suzuki, Saburo; Togawa, Eisei; Ishizaki, Hiroshi; and Hagiwara, Yoshiki, 5,910,864, Cl. 360-103.000.

Sony Corporation: *See—*
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Fujikawa, Kazuhide, 5,910,013, Cl. 438-57.000.
Itoh, Ietoshi, 5,910,893, Cl. 364-167.020.
Kagawa, Takashi; Yoshikawa, Takao; and Enomoto, Takuro, 5,911,028, Cl. 386-2.000.
Kimura, Motoi, 5,910,938, Cl. 369-116.000.
Kuroda, Hideaki, 5,910,671, Cl. 257-344.000.
Narui, Yoshihisa; Ouchiyama, Motoki; and Yagi, Yoko, 5,910,806, Cl. 345-508.000.
Neely, Phillip K., 5,909,805, Cl. 206-308.100.
Portman, John; Ninh, Loi; Tillyer, Garry; Lester, Gerald; and Newman, John, 5,910,814, Cl. 348-8.000.
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Sekine, Kazutoyo; and Lotocky, Dan, 5,910,966, Cl. 375-259.000.
Shimizume, Kazutoshi, 5,910,934, Cl. 369-50.000.
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Sugita, Takehiro, 5,910,964, Cl. 375-200.000.
Takahashi, Tomoyuki, 5,910,867, Cl. 360-106.000.
Takeuchi, Hajime, 5,910,825, Cl. 348-722.000.
Tsukuda, Hiroshi, 5,910,349, Cl. 428-42.300.
Uramoto, Yoichi, 5,910,904, Cl. 364-724.011.
Watanabe, Tetsu; and Aoki, Yoshio, 5,910,932, Cl. 369-13.000.
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Sony Corporation of Japan: *See—*
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Sony Trans Com Inc.: *See—*
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Portman, John; Ninh, Loi; Tillyer, Garry; Lester, Gerald; and Newman, John, 5,910,814, Cl. 348-8.000.

Soper, John Franklin; and Roach, Michael Thomas, to Pioneer Hi-Bred International, Inc. Soybean variety 90B72. 5,910,634, Cl. 800-312.000.

Source 1 Ergonomics, Inc.: *See—*
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Sourirajan, Srinivasa: *See—*
Chowdhury, Geeta; Adams, William; Conway, Brian; and Sourirajan, Srinivasa, 5,910,366, Cl. 428-379.000.

Southco, Inc.: *See—*
Ellis, Thomas J.; McCormack, Edward A.; and Dickerson, Harry L., 5,910,052, Cl. 470-6.000.

Southpac Trust International, Inc.: *See—*
Weder, Donald E., 5,910,051, Cl. 47-72.000.
Weder, Donald E., 5,910,089, Cl. 53-472.000.

Southwest Foundation for Biomedical Research: *See—*
Dooley, Thomas P.; and Robinson, Edward S., 5,910,424, Cl. 435-29.000.

Souyri, Denis: *See—*
Lecomte, Loic; Metge, Serge; and Souyri, Denis, 5,910,617, Cl. 570-261.000.

SP Reifenwerke GmbH: *See—*
Gerresheim, Manfred; Fuchs, Hans-Bernd; and Steinbrecht, Ulrich, 5,909,752, Cl. 141-38.000.

Spadafora, Tony: *See—*
Guttinger, Peter; Spadafora, Tony; and Elent, Michael, 5,910,078, Cl. 493-309.000.

Spahn, Francis J.: *See—*
Ginter, Karl L.; Shear, Victor H.; Spahn, Francis J.; and Van Wie, David M., 5,910,987, Cl. 380-24.000.

Sparrow, Graham Jeffrey: *See—*
Harris, Harold Robert; Aral, Halil; Bruckard, Warren John; Freeman, David Edward; Houchin, Martin Richard; McDonald, Kenneth Joun; Sparrow, Graham Jeffrey; and Grey, Ian Edward, 5,910,621, Cl. 75-399.000.

Spehrley, Charles W., Jr.: *See—*
Brooks, Jeffrey B.; Spehrley, Charles W., Jr.; Barss, Steven H.; Moynihan, Edward R.; Hine, Nathan P.; and Gailus, David W., 5,910,810, Cl. 347-88.000.

Spencer, Arthur F.; and Parsons, Gary H., to United States of America, Air Force. High density tungsten-loaded castable explosive. 5,910,638, Cl. 149-18.000.

Sperko, William A.; Turner, Robert E.; Smith, Steven L.; and Ray, William B., to B. Braun Medical, Inc. Flexible medical container with selectively enlargeable compartments and method for making same. 5,910,138, Cl. 604-408.000.

Spiegelman, Jeffrey J.: *See—*
Alvarez, Daniel, Jr.; and Spiegelman, Jeffrey J., 5,910,292, Cl. 423-210.000.

Spindt, Christopher J.: *See—*
Hansen, Ronald L.; and Spindt, Christopher J., 5,910,792, Cl. 345-74.000.

Spinillo, Gary Thomas: *See—*
Lyons, Christopher Francis; Spinillo, Gary Thomas; and Wood, Robert Lavin, 5,910,337, Cl. 427-259.000.

Spirac Engineering AB: *See—*
Bruke, Richard L., 5,910,243, Cl. 210-104.000.

Sprules, Rodney K. Coffee-based solid fuel composition. 5,910,454, Cl. 44-535.000.

Square D Company: *See—*
Broghammer, William J.; Niccolls, Richard W.; and Ophaug, Darrell P., 5,910,757, Cl. 335-9.000.

Sromin, Alexander; and Hiterer, Moshe, to Samon Engineering Ltd. High-power, low-voltage axial air-gap electrical machine having a compact stator. 5,910,697, Cl. 310-254.000.

St. Jude Medical, Inc.: *See—*
Reimink, Matthew S.; Schroeder, Richard F.; Mirsch, M. William, II; and Girard, Michael J., 5,910,170, Cl. 623-2.000.

STAAR Surgical Company Inc.: *See—*
Feingold, Vladimir; and Osipov, Alexei V., 5,910,537, Cl. 525-64.000.

Stacy, Nathan E.: *See—*
Trepka, William J.; Moczygemba, George A.; Stacy, Nathan E.; and Farrar, Ralph C., Jr., 5,910,546, Cl. 525-314.000.

Stahl, Hermann, to Hermann Stahl GmbH. Support for a printed circuit board with electronic components. 5,909,865, Cl. 248-346.030.

Stahls', Inc.: *See—*
Dressler, Donald R., 5,910,284, Cl. 264-564.000.

StairMaster Sports/Medical Products, Inc.: *See—*
Rawls, R. Lee; Duncan, James A.; and Ohrt, John Arthur, 5,910,072, Cl. 482-51.000.

Stairs, D. Leonard; and Nguyen, Lam T., to Aggregates Equipment, Inc. Self clearing conveyor. 5,909,799, Cl. 198-622.000.

Stalcup, Bruce W.: *See—*
Feinberg, Jerry M.; Johnson, Christopher H.; and Stalcup, Bruce W., 5,910,903, Cl. 364-578.000.

Stamos, Theodore C.; Galbraith, Stephen L.; and Honzelka, Thomas P., to Autotrol Corporation. Adaptable control valve for fluid treatment system. 5,910,244, Cl. 210-138.000.

Standiford, Theodore: *See*—
Peters-Golden, Marc; and Standiford, Theodore, 5,909,734, Cl. 128-898.000.

Stanford Telecommunications, Inc.: *See*—
Natali, Francis F.; and Ohlson, John E., 5,910,777, Cl. 340-825.440.

Stanojevic, Silvo, to Exar Corporation. Power-up/interrupt delay timer. 5,910,739, Cl. 327-143.000.

Staples, Lawrence L.; and O'Neil, Timothy, to Aladdin Insulation & Roofing, Inc. Air infiltration prevention in buildings. 5,910,088, Cl. 52-741.400.

Stavridis, Ioannis; and Deliconstantinos, George. Removal of noxious oxidants and carcinogenic volatile nitrosocompounds from cigarette smoke using biological substances. 5,909,736, Cl. 131-331.000.

St. Clair, David John; and Erickson, James Robert, to Shell Oil Company. Telechelic polymers and heterotelechelic polydiene block polymers with dual cure systems. 5,910,541, Cl. 525-99.000.

St. Clair, David John; and Erickson, James Robert, to Shell Oil Company. Adhesives and sealants based on telechelic polymers and heterotelechelic block polymers with dual cure systems. 5,910,542, Cl. 525-99.000.

St. Clair, Terry L.: *See*—
Simpson, Joycelyn O.; and St. Clair, Terry L., 5,909,905, Cl. 29-25.350.

Steelcase Inc.: *See*—
DeKraker, Larry, 5,909,923, Cl. 297-285.000.

Steele, Guy L., Jr., to Sun Microsystems, Inc. Circuit and method for rapid calculation of quotients and square roots. 5,910,910, Cl. 364-761.000.

Stehle, Jean-Louis: *See*—
Piwonka-Corle, Timothy R.; Chen, Xing; Lacomb, Lloyd J., Jr.; Stehle, Jean-Louis; and Zahorski, Dorian, 5,910,842, Cl. 356-369.000.

Steigerwald, Robert Louis: *See*—
Stevanovic, Ljubisa Dragoljub; Steigerwald, Robert Louis; and Kheraluwala, Mustansir Hussainy, 5,910,709, Cl. 315-225.000.

Steinbach, Andrew J.: *See*—
Debe, Mark K.; Larson, James M.; Balsimo, William V.; Steinbach, Andrew J.; and Ziegler, Raymond J., 5,910,378, Cl. 429-42.000.

Steinbrecht, Ulrich: *See*—
Gerresheim, Manfred; Fuchs, Hans-Bernd; and Steinbrecht, Ulrich, 5,909,752, Cl. 141-38.000.

Steiner, Karl; Straub, Karlheinz; Wolf, Robert; Meinecke, Albrecht; Chau-Huu, Tri; and Oechsle, Markus, to Voith Sulzer Papiermaschinen GmbH. Dryer section. 5,909,942, Cl. 34-117.000.

Steinmetz, Mark F.: *See*—
Busick, Rickey L.; and Steinmetz, Mark F., 5,910,199, Cl. 82-1.110.

Steinway, Inc.: *See*—
Jones, Scott; and Knupfer, Stefan, 5,911,167, Cl. 84-236.000.

Stelzer, Ceil, to Lift Feeder Inc. Force field separator. 5,909,813, Cl. 209-128.000.

Stephens, Scott A.: *See*—
Garrison, Arthur L.; Smigla, Terrence R.; and Stephens, Scott A., 5,910,945, Cl. 370-324.000.

Stevanovic, Ljubisa Dragoljub; Steigerwald, Robert Louis; and Kheraluwala, Mustansir Hussainy, to General Electric Company. Florescent lamp ballast control for zero -voltage switching operation over wide input voltage range and over voltage protection. 5,910,709, Cl. 315-225.000.

Stevens, Robert; Cranton, Wayne Mark; and Thomas, Clive Barrington, to Ultra Silicon Technology (UK) Limited. Laterally transmitting thin film electroluminescent device. 5,910,706, Cl. 313-498.000.

Stevenson, Sharon; and Gertzman, Arthur A. Allograft tissue material for filling spinal fusion cages or related surgical spaces. 5,910,315, Cl. 424-422.000.

Stewart, David: *See*—
Lo, Robin; Lee, Kanghoon; Tremmel, Lawrence; Stewart, David; and Anzai, Iwao Max, 5,911,044, Cl. 395-200.330.

Stewart, Harry E.; and MacElwee, Donald B., to Powsus Inc. Fire extinguishers. 5,909,776, Cl. 169-26.000.

Stewart, Russell: *See*—
Hollander, Milton Bernard; McKinley, William Earl; and Stewart, Russell, 5,910,030, Cl. 439-620.000.

STMicroelectronics, S.A.: *See*—
Reffay, Marius; and Chaussy, Danika, 5,910,748, Cl. 327-432.000.

Stoker, Dirk Adriaan: *See*—
Hendriks, Henricus Engelbertus Johannes; and Stoker, Dirk Adriaan, 5,910,212, Cl. 106-281.100.

Stollery, Gary: *See*—
Kopp, Clinton; Johnson, Warren; Day, Anthony; MacCormick, Antony; Markiewicz, Tomasz; Stollery, Gary; Thompson, Mark; Alexander, Brett; and Wende, Neil, 5,910,249, Cl. 210-617.000.

Stoneage, Inc.: *See*—
Zink, Gerald P., 5,909,848, Cl. 239-252.000.

Stoner, Glen. Tree digging apparatus. 5,909,714, Cl. 111-101.000.

Stork, Willem Hartman Jurriaan: *See*—
McNamara, David John; and Stork, Willem Hartman Jurriaan, 5,910,241, Cl. 208-251.00H.

Storm, Brian D.: *See*—
Callicotte, Mark J.; and Storm, Brian D., 5,910,944, Cl. 370-311.000.

Storz Instrument Co.: *See*—
Cochran, Bruce Robert; Eberhardt, Christopher Michael; and Painter, John A., 5,910,139, Cl. 606-1.000.

Strapack Corporation: *See*—
Watanabe, Tokuji, 5,910,079, Cl. 493-352.000.

Strassberger, Edward: *See*—
Leprince, Elisabeth; Carosso, Robert; Kiso, James; and Strassberger, Edward, 5,911,074, Cl. 395-703.000.

Strasser, Thomas Edward; and Atmur, Steven Donald, to Northrop Grumman Corporation. Fiber reinforced ceramic matrix composite marine engine riser elbow. 5,910,095, Cl. 60-272.000.

Strathmann, Siegfried: *See*—
Schwalge, Barbara; Müller, Ruth; Bayer, Herbert; Sauter, Hubert; Ammermann, Eberhard; Lorenz, Cisela; and Strathmann, Siegfried, 5,910,500, Cl. 514-275.000.

Straub, Karlheinz: *See*—
Steiner, Karl; Straub, Karlheinz; Wolf, Robert; Meinecke, Albrecht; Chau-Huu, Tri; and Oechsle, Markus, 5,909,942, Cl. 34-117.000.

Streit, Leon George; and Freestone, Robert Eugene, to Pioneer Hi-Bred International, Inc. Soybean variety 93B25. 5,910,633, Cl. 800-312.000.

Strelow, Diane: *See*—
Alper, Mark D.; and Strelow, Diane, 5,910,527, Cl. 524-274.000.

Stricker, Jesse C. Infrared heater. 5,910,267, Cl. 219-548.000.

Strittmatter, Günter, to Max-Planck-Gesellschaft Zur Forderung der Wissenschaften E.V. Chimeric genes comprising a fungus-responsive element. 5,910,629, Cl. 800-279.000.

Strong, H. Andrew; Levy, Julia; Huber, Gustav; and Fsadni, Mario, to QLT Phototherapeutics Inc. Vision through photodynamic therapy of the eye. 5,910,510, Cl. 514-502.000.

Stryker Corporation: *See*—
Fontenot, Mark G.; Feinberg, Richard; and Katz, Howard, 5,910,816, Cl. 348-65.000.

Stubbs, Cameron M.: *See*—
Fortenbery, Mark D.; Stubbs, Cameron M.; Payannet, Dominique J.; and Patience, Robert, 5,910,804, Cl. 345-419.000.

Stumberg, L. Herbert; and Fulton, James A., to North-South Corporation. Integrated safety monitoring and alarm system. 5,910,771, Cl. 340-573.100.

Stundzia, Charles A.: *See*—
Guthrie, Phillip K.; and Stundzia, Charles A., 5,909,952, Cl. 362-205.000.

Sturges, Thomas P.: *See*—
Arnell, Louis G.; Arnell, Leon; and Sturges, Thomas P., 5,910,075, Cl. 49-25.000.

Stux, Arnie: *See*—
Barker, Jeremy; Gao, Feng; and Stux, Arnie, 5,910,381, Cl. 429-197.000.

Su, Jeffrey Y.: *See*—
Ni, Jian; Gentz, Reiner L.; Su, Jeffrey Y.; and Li, Haodong, 5,910,431, Cl. 435-69.500.

Subrahmanyam, Machiraju: *See*—
Rao, Panja Kanta; Rao, Kamaraju Seetha Rama; Rao, Vattikonda Venkata; Narayana, Kalavaru Venkata; Venugopal, Akula; Rao, Alla Venkata Rama; and Subrahmanyam, Machiraju, 5,910,465, Cl. 502-209.000.

Suda, Yasumasa: *See*—
Endo, Atsushi; and Suda, Yasumasa, 5,910,585, Cl. 540-144.000.

Sudo, Sumio: *See*—
Takada, Kunio; Otani, Kenji; Yamada, Masayuki; Maru, Saburo; Sudo, Sumio; and Tanaka, Sadashi, 5,909,982, Cl. 405-52.000.

Sugano, Toshio: *See*—
Nishizawa, Hirotaka; Miura, Tomoyoshi; Anjou, Ichirou; Ishihara, Masamichi; Yamamura, Masahiro; Morita, Sadao; Araki, Takashi; Inoue, Kiyoshi; Sugano, Toshio; Kohara, Tetsuji; Yamada, Toshio; Sekine, Yasushi; Anata, Yoshiaki; Goto, Masakatsu; Kasai, Norihiko; Takeura, Shinobu; Tsukuda, Mutsuo; Yamaguchi, Yasunori; Sawada, Jiro; Iwai, Hidetoshi; Tsukui, Seiichiro; Kaji, Tadao; and Shiozawa, Noboru, 5,910,010, Cl. 438-15.000.
Watanabe, Masayuki; Sugano, Toshio; Tsukui, Seiichiro; Ono, Takashi; and Wakashima, Yoshiaki, 5,910,685, Cl. 257-777.000.

Sugi, Hikaru: *See*—
Matsuo, Hiroki; Tanaka, Hisashi; and Sugi, Hikaru, 5,910,159, Cl. 62-158.000.

Sugimoto, Hirohiko; and Fujiwara, Tamio, to Shionogi & Co., Ltd. Imidazole derivatives as anti-HIV agents. 5,910,506, Cl. 514-397.000.

Sugita, Takehiro, to Sony Corporation. Code detection apparatus. 5,910,964, Cl. 375-200.000.

Sugiyama, Hiroshi: *See*—
Kobayashi, Tohru; Matsushima, Yoshimasa; Sugiyama, Hiroshi; and Hagiwara, Toshimitsu, 5,910,610, Cl. 564-315.000.

Suh, Kyung W.: *See*—
Thoen, Johan A.; Suh, Kyung W.; Kennedy, James G.; and Shmidt, Creston D., 5,910,358, Cl. 428-316.600.

Sullivan, Brian W.: *See*—
Marangos, Paul J.; Fox, Anthony W.; and Sullivan, Brian W., 5,910,127, Cl. 604-49.000.

Sullivan, Paul O.: *See*—
Wilson, Robby W.; Bray, Bryan Kenneth; and Sullivan, Paul O., 5,910,126, Cl. 602-75.000.

Sumitomo Chemical Company, Ltd.: *See*—
Nagashima, Tohru; Nakamura, Hiroshi; Nomura, Hideo; and Maeda, Mituo, 5,910,560, Cl. 528-196.000.
Nomura, Kotohiro; Yamamoto, Michio; and Komatsu, Masashi, 5,910,618, Cl. 585-510.000.

Sumitomo Electric Industries, Ltd.: *See*—

Itozaki, Hideo; Harada, Keizo; Fujimori, Naoji; Yazu, Shuji; and Jodai, Tetsuji, 5,910,662, Cl. 257-33.000.
Iwasaki, Takashi; Tanaka, Nobuhisa; Iguchi, Yasuhiro; and Yamabayashi, Naoyuki, 5,910,014, Cl. 438-94.000.
Sato, Kenichi; and Hikata, Takeshi, 5,910,222, Cl. 148-96.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Kakumu, Kiichiro; and Tanaka, Masatoshi, 5,909,757, Cl. 152-543.000.
Miyazaki, Tatsuya, 5,909,756, Cl. 152-209.00R.
Tanaka, Yasuyuki; Nakade, Shinichi; Ochi, Atsuko; Sakaki, Toshiaki; Hayashi, Masaharu; Sekiguchi, Kazuhiro; Kuga, Akihito; and Kanamaru, Eiji, 5,910,567, Cl. 528-491.000.

Sumitomo Wiring Systems, Ltd.: *See*—
Tsuji, Takeshi, 5,910,028, Cl. 439-489.000.

Summers, James Hoyet: *See*—
Rosenburg, Bryan Savoye; Roth, Tova; Skelton, Michael Hadley; and Summers, James Hoyet, 5,910,801, Cl. 345-339.000.

Sumner, Roger A.: *See*—
Dezonno, Anthony J.; Sumner, Roger A.; and Bryla, James J., 5,910,983, Cl. 379-266.000.

Sumser, Siegfried: *See*—
Schade, Marco; Schmidt, Erwin; and Sumser, Siegfried, 5,910,000, Cl. 415-158.000.

Sun Microsystems, Inc.: *See*—
Jordan, Michael J., 5,911,071, Cl. 395-701.000.
Schaffer, Daniel H., 5,911,041, Cl. 395-183.140.
Schwartz, David C.; and Ungar, David M., 5,911,144, Cl. 707-206.000.
Singhal, Ashok; Liencres, Bjorn; Price, Jeff; Cerauskis, Frederick M.; Broniarczyk, David; Cheung, Gerald; Hagersten, Erik; and Agarwal, Nalini, 5,911,052, Cl. 395-293.000.
Steele, Guy L., Jr., 5,910,910, Cl. 364-761.000.
Whatley, Terry; Nowshadi, Saeed; Linden, Peter van der; Gianni, Robert R.; and Melanson, Ron, 5,911,081, Cl. 395-750.030.

Sundstrand Corporation: *See*—
Fordyce, Graham Thomas, 5,910,746, Cl. 327-379.000.

Sunkyong Industries, Ltd.: *See*—
Kwak, Wie-jong; Han, Chang-kyun; Kim, Hwan-su; An, Jae-suk; and Kim, Taek-soo, 5,910,307, Cl. 424-195.100.

Sunstream Manufacturing Inc.: *See*—
Bour, Anthony William, 5,909,877, Cl. 273-402.000.

Suratkal, Vasanth: *See*—
Kowalewski, Thomas Joseph; Karl, Matthew John; Grzanka, Thomas; Milne, Robert; Fischer, Eric Michael; and Suratkal, Vasanth, 5,909,918, Cl. 292-199.000.

Sussman, Morris. Protective cap and mirror unit for cosmetic pencil. 5,909,740, Cl. 132-318.000.

Susuki, Rumiko: *See*—
Uchida, Hiroki; Kiso, Masayuki; Nakamura, Takayuki; Kamitamari, Tohru; Susuki, Rumiko; and Shimizu, Koichiro, 5,910,340, Cl. 427-437.000.

Sutcliffe, Patrick L.: *See*—
Nock, Levin F.; Friemel, Barry; Sutcliffe, Patrick L.; Tirumalai, Arun P.; and Weng, Lee, 5,910,114, Cl. 600-437.000.

Suwabe, Masaaki: *See*—
Matsumura, Yasuo; Serizawa, Manabu; Suwabe, Masaaki; Sato, Shuji; Kadokura, Yasuo; Morijiri, Hisao; Shoji, Takeshi; and Mizoguchi, Takahiro, 5,910,389, Cl. 430-111.000.

Suyama, Eizo: *See*—
Takahashi, Yoichi; and Suyama, Eizo, 5,909,903, Cl. 285-330.000.

Suzuki, Kotaro; and Kainou, Kikuo, to Matsushita Electric Industrial Co., Ltd. Liquid level sensor. 5,910,189, Cl. 73-295.000.

Suzuki, Mariko: *See*—
Yamamoto, Tomoya; Haruta, Masahiro; Koike, Shoji; Shirota, Koromo; Takaide, Aya; and Suzuki, Mariko, 5,910,812, Cl. 347-106.000.

Suzuki, Masaru: *See*—
Hayashi, Tomoo; Suzuki, Masaru; and Akiyama, Masahiro, 5,910,721, Cl. 318-649.000.

Suzuki, Mitsuo; Itami, Yukio; and Ono, Kyousuke, to Ricoh Company, Ltd. Self-acting air bearing. 5,909,966, Cl. 384-115.000.

Suzuki, Saburo: *See*—
Hira, Yasuo; Toba, Tamaki; Imayama, Hirotaka; Ohkawa, Atsuko; Fujisawa, Masayasu; Nate, Kazuo; Sonobe, Hideki; Suzuki, Saburo; Togawa, Eisei; Ishizaki, Hiroshi; and Hagiwara, Yoshiki, 5,910,864, Cl. 360-103.000.

Suzuki, Takao: *See*—
Akamatsu, Toyokazu; and Suzuki, Takao, 5,910,412, Cl. 435-6.000.

Suzuki, Yasutaka: *See*—
Miyazaki, Takeshi; Suzuki, Yasutaka; and Tomishima, Hiroshi, 5,910,863, Cl. 360-103.000.

Svejkovsky, Reinhard: *See*—
Schrüfer, Andreas; Ittner, Walter; Svejkovsky, Reinhard; Schöpf, Andreas; and Ziegenbein, Dieter, 5,909,878, Cl. 277-398.000.

Swain, Paul; Kapec, Jeffrey; Tanaka, Kazuna; Gong, Feng; Brown, Geoffrey John; Ouellette, Gerry; and Tennant, William M., Jr., to C.R. Bard, Inc.; and University College London. Control handle for an endoscope. 5,910,105, Cl. 600-131.000.

Swami, Krishan Kumar: *See*—
Dohhen, Khem Chand; Bhatia, Harish Chander; Swami, Krishan Kumar; Sarin, Rakesh; Tuli, Deepak Kumar; Rai, Madan Mohan; and Bhatnagar, Akhilesh Kumar, 5,910,468, Cl. 508-332.000.

Swanson, Donald Keith: *See*—
Cicha, Walter Vladimir; and Swanson, Donald Keith, 5,910,297, Cl. 423-490.000.

Swart, Alan Charles; and Butler, Alen Paul, to Tow-Go USA, L.L.C. Rear-mounted tow hitch for connecting a towing vehicle electrical system to an electrical system of a towed vehicle trailer, or the like. 5,909,891, Cl. 280-422.000.

Swarup, Vijay: *See*—
Jones, Frank N.; Fu, Shou-Kuan; Jing, Wen; Zhang, Suru; and Swarup, Vijay, 5,910,563, Cl. 528-272.000.

Swearingen, Steven H.: *See*—
Jackson, Scott C.; Resnick, Paul Raphael; and Swearingen, Steven H., 5,910,615, Cl. 570-142.000.

Swift, Graham: *See*—
Freeman, Michael Bennett; Larson, Gary Robert; Merritt, Richard Foster; Paik, Yi Hyon; Shulman, Jan Edward; Swift, Graham; and Wilczynski, Robert, 5,910,531, Cl. 524-556.000.

Symantec Corporation: *See*—
Elliott, Scott, 5,911,060, Cl. 395-500.000.

Synder, Warren S.; and Williams, Timothy J., to Cypress Semiconductor Corp. Circuit and method for data recovery. 5,910,742, Cl. 327-165.000.

Synsorb Biotech Inc.: *See*—
Yeske, Robert E.; Verhagen, Robert A.; and Mendez, Joaquin Roberto, 5,910,579, Cl. 536-18.500.

Syrzycki, Marek: *See*—
Iniewski, Kris; and Syrzycki, Marek, 5,910,874, Cl. 361-56.000.

System 3R International AB: *See*—
Schill, Albrecht Paul, 5,909,882, Cl. 279-4.040.

SyStemix, Inc.: *See*—
Rigg, Richard J.; Chen, Jingyi; Dando, Jonathan S.; Plavec, Ivan; Forestell, Sean P.; and Bohnlein, Ernst, 5,910,434, Cl. 435-172.300.

Szalay, Aladar A.: *See*—
Hadlaczky, Gyula; and Szalay, Aladar A., 5,910,429, Cl. 435-69.100.

Szendrenyi, Bela B.: *See*—
Simpson, Gary R.; Eisenhart, Robert L.; Szendrenyi, Bela B.; and Maury, Richard J., 5,910,754, Cl. 333-17.300.

Szostak, Jack W.; Cuenoud, Bernard; and Huizenga, David E., to General Hospital Corporation, The. Catalytic DNA having ligase activity. 5,910,408, Cl. 435-6.000.

Szu, Kou-I; Chang, Kuo-Jung; Lih, Shyh-Shiuh; and Hsu, Wu-Chang, to Hiwin Technologies Corp. Recirculation path unit for linear rolling bearings. 5,909,965, Cl. 384-43.000.

Tabara, Suguru, to Yamaha Corporation. Manufacture of semiconductor device with fine pattens. 5,910,021, Cl. 438-636.000.

Tabb, Lloyd: *See*—
Solton, Randolph T.; and Tabb, Lloyd, 5,911,070, Cl. 395-701.000.

Tabe, Koshi, to Shimano, Inc. Bicycle hub. 5,909,931, Cl. 301-110.500.

Tada, Osamu: *See*—
Tochio, Tatsuya; Tada, Osamu; Oguma, Toshio; Morimoto, Kazunobu; and Fujii, Mototsugu, 5,911,061, Cl. 395-500.440.

Tadano, Yuji: *See*—
Harada, Naofumi; Kizawa, Satoshi; Tadano, Yuji; and Kawata, Kaoru, 5,910,750, Cl. 327-544.000.

Taga, Junichi: *See*—
Nishimura, Hirofumi; Watanabe, Tomomi; Taga, Junichi; and Imada, Michihiro, 5,909,724, Cl. 123-436.000.

Taga, Yutaka: *See*—
Yamaoka, Masaaki; Abe, Tetsuya; Matsui, Hideaki; and Taga, Yutaka, 5,909,720, Cl. 123-179.300.

Tahata, Hiroyoshi: *See*—
Takayama, Kazue; Harashima, Akira; Ohta, Tsunetaka; Izumi, Noboru; Tahata, Hiroyoshi; and Kurimoto, Masashi, 5,910,303, Cl. 424-85.100.

Taiwan Fu Hsing Industry Co., Ltd.: *See*—
Wang, Jen-Feng, 5,909,919, Cl. 292-359.000.

Taiwan Semiconductor Manufacturing Co., Ltd.: *See*—
Yu, Chen-Hua, 5,911,110, Cl. 438-424.000.

Takada, Kunio; Otani, Kenji; Yamada, Masayuki; Maru, Saburo; Sudo, Sumio; and Tanaka, Sadashi, to Hitachi, Ltd. Large-depth underground drainage facility and method of running same. 5,909,982, Cl. 405-52.000.

Takada, Rie: *See*—
Mishiro, Hidehiro; Tsubone, Kenichiro; Abe, Mitsunori; and Takada, Rie, 5,910,755, Cl. 333-24.00C.

Takada, Yoshio: *See*—
Kobayashi, Kei-Ichiro; Kato, Tomoaki; Takada, Yoshio; Wada, Osamu; Kobayashi, Masahiro; Furuse, Naomi; Fujiwara, Yukio; Shichimiya, Shoichi; and Ishibe, Shinji, 5,910,761, Cl. 338-21.000.

Takagi, Hirohito; and Rutschmann, Richard, to Deutsche Thomson Brandt GmbH. Vibration-resistant playback device having improved synchronization. 5,910,935, Cl. 369-54.000.

Takagi, Yasushi: *See*—
Yanai, Yuichi; Hirai, Takayuki; Oba, Masayoshi; Ikeda, Kiyoshi; Takagi, Yasushi; Ishikawa, Takeo; Harada, Kazuhiko; Iida, Hirotaka; Arakawa, Kazuhiko; Ii, Masazumi; and Nakamura, Yuzo, 5,910,279, Cl. 264-282.000.

Takahara, Jun: *See*—
Urata, Hisao; Aoshima, Takayuki; Oshiki, Toshiyuki; Takahara, Jun; Iwade, Shinji; Nanba, Yoshiaki; Araki, Yoshitaka; Nakamura, Hirofumi; and Okano, Takeshi, 5,910,619, Cl. 585-513.000.

Takahashi, Eitaro: *See*—
Urata, Hisao; Itagaki, Hiroaki; Takahashi, Eitaro; Wada, Yasuhiro; Tanaka, Yoshiyuki; and Ogino, Yasukazu, 5,910,600, Cl. 558-162.000.

Takahashi, Hideki, to Mitsubishi Chemical Corporation. Thermoplastic elastomer composition and composite molded product. 5,910,540, Cl. 525-92.00B.

Takahashi, Kenichi; Matsuno, Hiroyuki; Obata, Hiroyasu; and Kawai, Megumi, to Hitachi Techno Engineering Co., Ltd. Method for adjusting engaged clearance between rotors of screw compressor and apparatus therefor. 5,910,001, Cl. 418-1.000.

Takahashi, Kenichi; and Nagata, Kouichi, to Fuji Photo Optical Co., Ltd. Image stabilizing apparatus. 5,910,859, Cl. 359-554.000.

Takahashi, Koji, to Canon Kabushiki Kaisha. Sheet supplying apparatus with shift and auxiliary shift for sheet support. 5,909,872, Cl. 271-116.000.

Takahashi, Nobuhito: *See*—
Fukasawa, Shigenori; Isono, Masahiro; Kawakami, Kazuhisa; Mochizuki, Seiji; Takahashi, Nobuhito; and Kobayashi, Atsushi, 5,910,808, Cl. 347-30.000.

Takahashi, Sadao: *See*—
Ohuchi, Satoshi; and Takahashi, Sadao, 5,911,004, Cl. 382-173.000.

Takahashi, Shoji; Shimizu, Syozo; and Shimodaira, Kenichi, to Injex Corporation. Method of manufacturing sintered compact. 5,911,102, Cl. 419-38.000.

Takahashi, Sinichi: *See*—
Yamasaki, Isamu; Tomita, Ichio; Honma, Kengo; and Takahashi, Sinichi, 5,909,849, Cl. 239-700.000.

Takahashi, Takeo: *See*—
Hirayama, Hideaki; and Takahashi, Takeo, 5,911,040, Cl. 395-183.140.

Takahashi, Tomoyuki, to Sony Corporation. Magnetic head device with integrally molded conductive elastic body and resin body. 5,910,867, Cl. 360-106.000.

Takahashi, Yoichi; and Suyama, Eizo, to Calsonic Corporation. Coupling structure for coupling two pipes. 5,909,903, Cl. 285-330.000.

Takaide, Aya: *See*—
Yamamoto, Tomoya; Haruta, Masahiro; Koike, Shoji; Shirota, Koromo; Takaide, Aya; and Suzuki, Mariko, 5,910,812, Cl. 347-106.000.

Takaki, Kenji: *See*—
Yamasaki, Yasuhiro; Kuroda, Kazuyoshi; and Takaki, Kenji, 5,910,384, Cl. 430-58.000.

Takano, Hisashi: *See*—
Kawanami, Yoshimi; Takano, Hisashi; Umemura, Kaoru; Madokoro, Yuichi; and Tomimatsu, Satoshi, 5,910,871, Cl. 360-122.000.

Takano, Hitoshi: *See*—
Hachisuka, Hisao; Kondo, Yoshihiko; Ikeda, Kenichi; Takano, Hitoshi; and Mochizuki, Amane, 5,910,357, Cl. 428-315.500.

Takasago International Corporation: *See*—
Kobayashi, Tohru; Matsushima, Yoshimasa; Sugiyama, Hiroshi; and Hagiwara, Toshimitsu, 5,910,610, Cl. 564-315.000.

Takatori, Sunao: *See*—
Shou, Guoliang; Zhou, Changming; Zhou, Xuping; Yamamoto, Makoto; Takatori, Sunao; Sawahashi, Mamoru; and Adachi, Fumiyuki, 5,910,948, Cl. 370-335.000.

Takayama, Atsushi: *See*—
Yonekawa, Mitsuhisa; and Takayama, Atsushi, 5,909,781, Cl. 180-206.000.

Takayama, Kazue; Harashima, Akira; Ohta, Tsunetaka; Izumi, Noboru; Tahata, Hiroyoshi; and Kurimoto, Masashi, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Agent for promoting the platelet and the leukocyte productions. 5,910,303, Cl. 424-85.100.

Takeda Chemical Industries, Ltd.: *See*—
Hoshino, Tetsuo; Muranishi, Hiroya; Taketomi, Shigehisa; and Iwasa, Susumu, 5,910,492, Cl. 514-114.000.

Takehara, Yoshifumi, to Canon Kabushiki Kaisha. Sheet post-processing apparatus. 5,909,871, Cl. 270-58.070.

Takeichi, Hideo: *See*—
Wang, Xiaorong; Clark, Frank J.; Takeichi, Hideo; Matsuse, Takahiro; Mashita, Naruhiko; and Toyosawa, Shinichi, 5,910,530, Cl. 524-534.000.

Takemura, Hisashi, to NEC Corporation. Field-emission cold cathode and manufacturing method for same. 5,910,701, Cl. 313-309.000.

Taketomi, Shigehisa: *See*—
Hoshino, Tetsuo; Muranishi, Hiroya; Taketomi, Shigehisa; and Iwasa, Susumu, 5,910,492, Cl. 514-114.000.

Takeuchi, Hajime, to Sony Corporation. Video signal transmitting apparatus with attendant data insertion and extraction functions. 5,910,825, Cl. 348-722.000.

Takeuchi, Hikaru: *See*—
Katsura, Naomi; Takeuchi, Hikaru; and Watanabe, Yuka, 5,910,370, Cl. 428-425.500.

Takeuchi, Kikuko: *See*—
Kushibiki, Nobuo; and Takeuchi, Kikuko, 5,910,272, Cl. 252-500.000.
Yoshinaga, Kazuo; Nishida, Shunichiro; Kawahara, Masataka; Hiraoka, Keiko; Kushibiki, Nobuo; Kobayashi, Hideki; Takeuchi, Kikuko; and Masatomi, Toru, 5,910,386, Cl. 430-66.000.

Takeuchi, Takeshi, to NEC Corporation. Waveguide type semiconductor photodetecting device method for fabricating. 5,910,012, Cl. 438-31.000.

Takeura, Shinobu: *See*—
Nishizawa, Hirotaka; Miura, Tomoyoshi; Anjou, Ichirou; Ishihara, Masamichi; Yamamura, Masahiro; Morita, Sadao; Araki, Takashi; Inoue, Kiyoshi; Sugano, Toshio; Kohara, Tetsuji; Yamada, Toshio; Sekine, Yasushi; Anata, Yoshiaki; Goto, Masakatsu; Kasai, Norihiko; Takeura, Shinobu; Tsukuda, Mutsuo; Yamaguchi, Yasunori; Sawada, Jiro; Iwai, Hidetoshi; Tsukui, Seiichiro; Kaji, Tadao; and Shiozawa, Noboru, 5,910,010, Cl. 438-15.000.

Takezawa, Tsutomu: *See*—
Kato, Masao; Kataoka, Kazunori; Nagasaki, Yukio; and Takezawa, Tsutomu, 5,910,485, Cl. 514-34.000.

Taki, Nobuhiro, to Fujitsu Limited. Data acquisition method and protocol controller circuit. 5,911,062, Cl. 395-551.000.

Takigawa, Yasuyuki: *See*—
Hase, Yoshihiko; Morotomi, Hidetoshi; Okamoto, Hiromi; Komura, Syoji; Takigawa, Yasuyuki; Hirano, Shigeyuki; and Shiode, Tetsuo, 5,910,383, Cl. 429-231.400.

Takuman, Osamu: *See*—
Matsushita, Takao; and Takuman, Osamu, 5,910,525, Cl. 524-267.000.

Tam, Andrew Ching: *See*—
Baumgart, Peter; Poon, Chie Ching; and Tam, Andrew Ching, 5,910,262, Cl. 219-121.770.

Tam, Kimo Y. F., to Analog Devices, Inc. Switched-transconductance multiplexer circuit with integrated T-switches. 5,910,780, Cl. 340-825.790.

Tamagaki, Akira, to Sharp Kabushiki Kaisha. Maintenance system for image-forming apparatuses. 5,910,849, Cl. 358-442.000.

Tamoto, Nozomu: *See*—
Adachi, Chihaya; Sasaki, Masaomi; Nagai, Kazukiyo; Shimada, Tomoyuki; Tanaka, Chiaki; Tamoto, Nozomu; Katayama, Akira; Anzai, Mitsutoshi; Imai, Akihiro; and Morooka, Katsuhiro, 5,910,561, Cl. 528-196.000.

Tamura, Hiroki: *See*—
Ichimoto, Kazuhiro; Nakayama, Osamu; Kishimoto, Mitsuru; Iida, Kazumasa; Tamura, Hiroki; Miyamoto, Katsuhiko; and Ando, Hiromitsu, 5,909,723, Cl. 123-406.000.

Tamura, Kazuyuki: *See*—
Adachi, Katsura; Usui, Makoto; Nishii, Kota; Muraya, Takashi; Kobayashi, Toshihiro; Tamura, Kazuyuki; and Sato, Junichi, 5,909,819, Cl. 220-623.000.

Tamura, Satoshi: *See*—
Hasegawa, Takashi; Kimura, Yoichi; and Tamura, Satoshi, 5,911,100, Cl. 399-303.000.

Tan, Ya-Te. Structure of paper pallet. 5,909,712, Cl. 108-51.300.

Tanabe, Kosuke: *See*—
Ohmuro, Norihiko; Kuramoto, Akio; and Tanabe, Kosuke, 5,910,790, Cl. 343-895.000.

Tanaka, Chiaki: *See*—
Adachi, Chihaya; Sasaki, Masaomi; Nagai, Kazukiyo; Shimada, Tomoyuki; Tanaka, Chiaki; Tamoto, Nozomu; Katayama, Akira; Anzai, Mitsutoshi; Imai, Akihiro; and Morooka, Katsuhiro, 5,910,561, Cl. 528-196.000.

Tanaka, Hideo: *See*—
Masuta, Chikara; Uehara, Kyoko; Tanaka, Hideo; and Kuwata, Shigeru, 5,910,444, Cl. 435-419.000.

Tanaka, Hisashi: *See*—
Matsuo, Hiroki; Tanaka, Hisashi; and Sugi, Hikaru, 5,910,159, Cl. 62-158.000.

Tanaka, Hitoshi; Aoki, Masakazu; and Itoh, Kiyoo, to Hitachi, Ltd.; and Hitachi ULSI Engineering Corp. Semiconductor integrated circuit including voltage converter effective at low operational voltages. 5,910,924, Cl. 365-226.000.

Tanaka, Kazuna; Kapec, Jeffrey; and Naoi, Yukiko, to Franzus Company, Inc. Stowable nesting handle construction. 5,909,759, Cl. 16-112.000.

Tanaka, Kazuna: *See*—
Swain, Paul; Kapec, Jeffrey; Tanaka, Kazuna; Gong, Feng; Brown, Geoffrey John; Ouellette, Gerry; and Tennant, William M., Jr., 5,910,105, Cl. 600-131.000.

Tanaka, Kuniaki: *See*—
Ueda, Naoki; Noguchi, Tadayuki; Sakai, Shuji; Tanaka, Kuniaki; and Kittaka, Yoshiaki, 5,910,807, Cl. 345-515.000.

Tanaka, Masatoshi: *See*—
Kakumu, Kiichiro; and Tanaka, Masatoshi, 5,909,757, Cl. 152-543.000.

Tanaka, Nobuhisa: *See*—
Iwasaki, Takashi; Tanaka, Nobuhisa; Iguchi, Yasuhiro; and Yamabayashi, Naoyuki, 5,910,014, Cl. 438-94.000.

Tanaka, Sadashi: *See*—
Takada, Kunio; Otani, Kenji; Yamada, Masayuki; Maru, Saburo; Sudo, Sumio; and Tanaka, Sadashi, 5,909,982, Cl. 405-52.000.

Tanaka, Shinya: *See*—
Shimada, Takayuki; Kanemori, Yuzuru; Katayama, Mikio; Tanaka, Shinya; and Kubo, Masumi, 5,910,829, Cl. 349-110.000.

Tanaka, So: *See*—
Blakely, Jack M.; Tanaka, So; Umbach, Christopher C.; and Tromp, Rudolf M., 5,910,339, Cl. 427-376.200.

Tanaka, Tadashi: *See*—
Matsumoto, Nobuo; and Tanaka, Tadashi, 5,911,091, Cl. 396-615.000.

Tanaka, Takao, to NEC Corporation. MOS transistor read-only memory device. 5,911,107, Cl. 438-276.000.

Tanaka, Toshihiro: *See*—
Kato, Masataka; Adachi, Tetsuo; Tanaka, Toshihiro; Sasaki, Toshio; Kume, Hitoshi; and Kimura, Katsutaka, 5,910,913, Cl. 365-185.110.

Tanaka, Yasuyuki; Nakade, Shinichi; Ochi, Atsuko; Sakaki, Toshiaki; Hayashi, Masaharu; Sekiguchi, Kazuhiro; Kuga, Akihito; and Kanamaru, Eiji, to Fuji Latex Co., Ltd.; Sumitomo Rubber Industries, Ltd.; and Kao Corporation. Process for preparing deproteinized natural rubber latex molding and deproteinizing agent for natural rubber latex. 5,910,567, Cl. 528-491.000.

Tanaka, Yoshio; Koide, Kazuyuki; and Kawabata, Hiroyuki. Preparation of antimony ethyleneglyoxide. 5,910,599, Cl. 556-76.000.

Tanaka, Yoshiyuki: *See*—
Urata, Hisao; Itagaki, Hiroaki; Takahashi, Eitaro; Wada, Yasuhiro; Tanaka, Yoshiyuki; and Ogino, Yasukazu, 5,910,600, Cl. 558-162.000.

Taniguchi, Masahiko: *See*—
Aratake, Kazuhiko; Taniguchi, Masahiko; and Ito, Hidemi, 5,910,362, Cl. 428-364.000.

Taniguchi, Yukinobu: *See*—
Niikura, Yasuhiro; Taniguchi, Yukinobu; Akutsu, Akihito; Tonomura, Yoshinobu; Satoh, Takashi; Shimizu, Atsushi; and Hamada, Hiroshi, 5,911,008, Cl. 382-236.000.

Taniishi, Shinnosuke, to Canon Kabushiki Kaisha. Character recognition method and apparatus capable of handling handwriting. 5,911,013, Cl. 382-280.000.

Tanji, Todd M.: *See*—
Cinbis, Can; Reinke, James D.; and Tanji, Todd M., 5,910,156, Cl. 607-27.000.

Taoka, Ikuo: *See*—
Nishimura, Takashi; Sekiya, Naohide; Kimura, Takeshi; Inoue, Hideki; Nagano, Hiroshi; and Taoka, Ikuo, 5,910,955, Cl. 370-401.000.

Taraboulos, Mark; Phelps III, William; and Yahaya, Fauzi, to Motorola, Inc. Contact retention system. 5,910,380, Cl. 429-100.000.

Taraiya, Ajay Kumar: *See*—
Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,910,346, Cl. 428-36.900.

Tark, Kyoung Sig: *See*—
Lee, Un Seop; Oh, Jae Seog; Tark, Kyoung Sig; Oh, Won Sik; Kim, Hyeong Seok; and Lee, Sang Min, 5,909,749, Cl. 137-857.000.

Tasaka, Kazuhiro, to NEC Corporation. Semiconductor memory device and fabrication thereof. 5,911,106, Cl. 438-276.000.

Tatar, Stephen, to Bones Consulting, LLC. Polyaxial pedicle screw having a rod clamping split ferrule coupling element. 5,910,142, Cl. 606-61.000.

Tate, Bruce Allan: *See*—
Li, Shih-Gong; and Tate, Bruce Allan, 5,911,138, Cl. 707-3.000.

Tatsu, Haruyoshi: *See*—
Saito, Satoru; and Tatsu, Haruyoshi, 5,910,552, Cl. 526-247.000.

Tatum, John Philip: *See*—
Griffin, Mary Catherine Ambrose; Howarth, Leslie George; and Tatum, John Philip, 5,910,372, Cl. 428-429.000.

Taubman, Dmitriy: *See*—
Berg, Gary; Taubman, Dmitriy; and Verchivker, Jakov, 5,910,233, Cl. 203-10.000.

Taute, Carl J., to Riverwood International Corporation. DC drive positioning system. 5,910,090, Cl. 53-504.000.

Tavana, Seyed Mehdi: *See*—
Brown, Stephen Martin; Gott, Brian David; Gray, Thomas; and Tavana, Seyed Mehdi, 5,910,604, Cl. 562-435.000.

Taylor Company: *See*—
Newton, Robert K.; and Erickson, Mark T., 5,910,207, Cl. 99-349.000.

Taylor, Greg O.: *See*—
Livesay, Richard E.; Bargfrede, Brent C.; Bender, John L.; Taylor, Greg O.; and Dawson, Phillip W., 5,909,962, Cl. 37-456.000.

Taylor, Joseph Stanley: *See*—
Atkinson, Leon Eric; Taylor, Joseph Stanley; and Miller, Paul Hier, 5,910,228, Cl. 156-450.000.

TBI Concepts, L.L.C.: *See*—
Guthrie, Phillip K.; and Stundzia, Charles A., 5,909,952, Cl. 362-205.000.

TCI Incorporated: *See*—
Ponomarev-Stepnoy, Nikolai N.; Pavshook, Vladimir A.; Bebikh, Grigoriy F.; Khvostionov, Vladimir Ye.; Trukhlyaev, Peter S.; and Shvetsov, Ivan K., 5,910,971, Cl. 376-189.000.

Teagno, Vladimiro, to Thomas & Betts International, Inc. Automatic cable tie installation tool. 5,909,751, Cl. 140-123.600.

Technimark, Inc.: *See*—
Atkinson, Leon Eric; Taylor, Joseph Stanley; and Miller, Paul Hier, 5,910,228, Cl. 156-450.000.

Technology Management, Inc.: *See*—
Cable, Thomas L.; Petrik, Michael A.; and Lee, Benson P., 5,910,238, Cl. 205-634.000.

Teijin Limited: *See*—
Ishikawa, Toshifumi; Okada, Shinichiro; Fukuda, Masayuki; and Tomita, Hiroshi, 5,910,356, Cl. 428-215.000.

Teixeira, Christopher M.: *See*—
Molvig, Kim; Chen, Hudong; Teixeira, Christopher M.; Remondi, Stephen; Hill, David Lawrence; Gang, Fongyan; Alajbegovic, Ales; and Hoch, James E., Jr., 5,910,902, Cl. 364-578.000.

Tektro Technology Corporation: *See*—
Chen, Zen Ming, 5,910,193, Cl. 74-489.000.

Tektronix, Inc.: *See*—
Slavin, Keith R., 5,910,908, Cl. 364-724.100.

Telefonaktiebolaget LM Ericsson: *See*—
Bilström, Lars; and Diachina, John, 5,910,949, Cl. 370-337.000.
Corriveau, Michel; and Houde, Michel, 5,911,122, Cl. 455-432.000.

Telia AB: *See*—
Wickman, Johan, 5,910,943, Cl. 370-279.000.

Telstra Corporation Limited: *See*—
Dalinkiewicz, Nicholas, 5,909,920, Cl. 296-24.100.

Telxon Corporation: *See*—
Campo, James A., 5,910,653, Cl. 250-214.0AL.

Temic Telefunken microelectronic GmbH: *See*—
Nosswitz, Manfred, 5,911,116, Cl. 455-83.000.

ten Brink, Stephan, to Lucent Technologies Inc. Demodulator phase correction for code division multiple access receiver. 5,910,950, Cl. 370-342.000.

Tennant, William M., Jr.: *See*—
Swain, Paul; Kapec, Jeffrey; Tanaka, Kazuna; Gong, Feng; Brown, Geoffrey John; Ouellette, Gerry; and Tennant, William M., Jr., 5,910,105, Cl. 600-131.000.

Tenner, Manfred G.: *See*—
Van der Werf, Jan E.; Dirksen, Peter; and Tenner, Manfred G., 5,910,847, Cl. 356-401.000.

Tenten, Andreas; Weidlich, Peter; and Linden, Gerd, to BASF Aktiengesellschaft. Catalyst consisting of a hollow cylindrical carrier having a catalytically active oxide material applied to the outer surface of the carrier, and process for using said catalyst. 5,910,608, Cl. 562-532.000.

Tepnel Medical Limited: *See*—
Minter, Stephen, 5,910,406, Cl. 435-6.000.

Terada, Kazuaki: *See*—
Shiga, Kiyotaka; Fukui, Akio; Terada, Kazuaki; Yamada, Takahiro; Toyoda, Haruyasu; Miyake, Masashi; and Umeda, Akihiro, 5,909,985, Cl. 408-1.00R.

Teradyne, Inc.: *See*—
Proskauer, Daniel C.; and Deshpande, Pradeep B., 5,910,895, Cl. 364-468.280.

Tetra Laval Holdings & Finance S.A.: *See*—
Sasaki, Masanori, 5,909,846, Cl. 239-106.000.

Texas A&M University System: *See*—
Cummins, Joseph M., 5,910,304, Cl. 424-85.700.

Texas Instruments Incorporated: *See*—
Brown, Brian L.; Brown, David R.; Penney, Daniel B.; and Norwood, Roger D., 5,910,923, Cl. 365-201.000.
Ding, Yinong, 5,911,170, Cl. 84-661.000.
Hashimoto, Masashi, 5,910,926, Cl. 365-230.030.
Hu, Yin, 5,910,017, Cl. 438-404.000.
Lu, Xiaolin, 5,910,970, Cl. 375-377.000.
Plumton, Donald Lynn; and Yang, Jau-Yuann, 5,910,665, Cl. 257-284.000.
Prengle, Scott H.; and Eklund, Robert H., 5,910,676, Cl. 257-378.000.
Shiell, Jonathan H., 5,911,057, Cl. 395-393.000.
Smayling, Michael C.; Parker, Ronald N.; Torreno, Manuel L., Jr., deceased, 5,911,104, Cl. 438-202.000.

Th. Goldschmidt AG: *See*—
Grüning, Burghard; Rau, Harald; Simpelkamp, Jörg; and Weitemeyer, Christian, 5,910,564, Cl. 528-310.000.

Thakur, Randhir P. S.: *See*—
DeBoer, Scott Jeffrey; Gealy, F. Daniel; and Thakur, Randhir P. S., 5,910,880, Cl. 361-311.000.

Thibaudeau, Normand, to Plastic Development, Inc. Container for storing and transporting leadframes. 5,909,812, Cl. 206-723.000.

Thiel, Norbert; and Datzmann, Gabriele, to Vita Zahnfabrik H. Rauter GmbH & Co. KG. Process for manufacturing dental prosthetics based on ceramics. 5,910,273, Cl. 264-16.000.

Thies, Edward L.; Bertsch, Roger J.; and Jarvis, Wilbur W., to Whirlpool Corporation. Automatic purge filtration system for a dishwasher. 5,909,743, Cl. 134-10.000.

Thijssen, Aloysius P.: *See*—
Samsom, Sebastianus M.; Thijssen, Aloysius P.; and Baker, Keith, 5,911,064, Cl. 395-556.000.

Thimons, Thomas V.: *See*—
Beer, Kenneth D.; Cross, Christopher G.; Thimons, Thomas V.; and Unites, Thomas P., 5,910,458, Cl. 442-367.000.

Thoen, Johan A.; Suh, Kyung W.; Kennedy, James G.; and Shmidt, Creston D., to Dow Chemical Company, The. PVC-free foamed flooring and wall coverings. 5,910,358, Cl. 428-316.600.

Thomas & Betts International, Inc.: *See*—
Teagno, Vladimiro, 5,909,751, Cl. 140-123.600.

Thomas, Andrew James, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defense in Her Britannic Majesty's Government of the. Passive acousto-optic modulator. 5,910,855, Cl. 359-285.000.

Thomas, Clive Barrington: *See*—
Stevens, Robert; Cranton, Wayne Mark; and Thomas, Clive Barrington, 5,910,706, Cl. 313-498.000.

Thomas, Stephen E. Reflective shade for electric table lamp. 5,909,954, Cl. 362-307.000.

Thompson, Mark: *See*—
Kopp, Clinton; Johnson, Warren; Day, Anthony; MacCormick, Antony; Markiewicz, Tomasz; Stollery, Gary; Thompson, Mark; Alexander, Brett; and Wende, Neil, 5,910,249, Cl. 210-617.000.

Thomson-CSF: *See*—
Grenot, Thierry; Vivant, Colette; and Letourneur, Patrick, 5,910,942, Cl. 370-236.000.
Lipskier, Jean-François, 5,910,286, Cl. 422-68.100.
Normant, Eric, 5,910,785, Cl. 342-25.000.

Thoreau, Etienne; and Shroot, Braham, to Centre International De Recherches Dermatologiques Galderma. Polycyclic polyenic compounds and pharmaceutical/cosmetic compositions comprised thereof. 5,910,508, Cl. 514-432.000.

Thorne, Henry F., to Cycle Time Corporation. Tool center point calibration for spot welding guns. 5,910,719, Cl. 318-560.000.

Three Bond Co., Ltd.: *See*—
Maeda, Tetsuro, 5,909,976, Cl. 401-129.000.

Throneburg, James L.; McLelland, James G.; Gallenstein, Victor J.; Kelley, Leon E.; and Richie, Douglas H., to Throneburg, James L. Shoe last and method of constructing a shoe. 5,909,719, Cl. 12-142.00R.
Thurkauf, Andrew: *See*—
Chen, Xi; Yuan, Jun; and Thurkauf, Andrew, 5,910,586, Cl. 544-34.000.
Tian, Simon; and Kasbarian, Jean-Marc, to Schneider Electric SA. Device for preventive detection of faults with recognition of the type of load. 5,910,875, Cl. 361-78.000.
Tijanic, Veso S., to Mark IV Industries Limited. Display device with disk and LED. 5,909,971, Cl. 40-449.000.
Tillyer, Garry: *See*—
Portman, John; Ninh, Loi; Tillyer, Garry; Lester, Gerald; and Newman, John, 5,910,814, Cl. 348-8.000.
Tingley, Daniel A. Wood structural member having plural multiple-fiber reinforcements. 5,910,352, Cl. 428-114.000.
Tioxide Group Services Limited: *See*—
Ashdown, Steven Hugh; McIntyre, Robert; and Richmond, Neil Martin, 5,910,213, Cl. 106-436.000.
Tipton, Sheryl A.; and Keil, Gary D., to Caterpillar Inc. Steel article having high hardness and improved toughness and process for forming the article. 5,910,223, Cl. 148-210.000.
Tirumalai, Arun P.: *See*—
Nock, Levin F.; Friemel, Barry; Sutcliffe, Patrick L.; Tirumalai, Arun P.; and Weng, Lee, 5,910,114, Cl. 600-437.000.
Tirumalai, Suresh S.: *See*—
DeWachter, Gary E.; Nisley, Donald L.; and Tirumalai, Suresh S., 5,910,049, Cl. 464-80.000.
Tlok, Bernd. Water filtration. 5,910,248, Cl. 210-608.000.
Toba, Tamaki: *See*—
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Tochigi Fuji Sangyo Kabushiki Kaisha: *See*—
Kuroki, Tadashi, 5,910,064, Cl. 475-199.000.
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Togawa, Eisei: *See*—
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Tohriiwa, Norio: *See*—
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Tokuyama Corporation: *See*—
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Toland, David R.: *See*—
Muscarella, Patrick; Quinter, Gary A.; Toland, David R.; and Hugick, James, 5,910,201, Cl. 82-129.000.
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Tomita, Ichio: *See*—
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Tomita, Yoshihiro: *See*—
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Matsuhisa, Yoji; Kobayashi, Masanobu; Okuda, Akira; and Shimizu, Kazuharu, 5,910,456, Cl. 442-179.000.
Torregrossa, Philippe, to Alcatel Mobile Phones. Device for testing telecommunication terminals, in particular mobile radio terminals, and telecommunication terminal adapted to be tested by means of a device of this kind. 5,910,977, Cl. 379-29.000.
Torreno, Arlene K., legal representative: *See*—
Smayling, Michael C.; Parker, Ronald N.; Torreno, Manuel L., Jr., deceased, 5,911,104, Cl. 438-202.000.
Torreno, Manuel L., Jr., deceased (by Arlene K. Torreno, legal representative): *See*—
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Toshiba Kikai Kabushiki Kaisha: *See*—
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Oshiro, Takeo; Hirosawa, Masao; Kanno, Hiroshi; Nakamura, Hidekazu; Ono, Yasuyuki; Goto, Takashi; and Yamamoto, Naoki, 5,910,328, Cl. 425-595.000.
Tournier, Hervé; Pochon, Sibylle; and Lamy, Bernard, to Bracco Research S.A. Amphiphilic linkers for coupling administrable diagnostically or physiologically active agents and bioselective targeting compounds. 5,910,300, Cl. 424-9.340.
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Swart, Alan Charles; and Butler, Alen Paul, 5,909,891, Cl. 280-422.000.
Towell, Timothy N., to Intel Corporation. Audio font used for capture and rendering. 5,911,129, Cl. 704-272.000.
Toyama, Koichi, to Denso Corporation. Method and apparatus for reduced discharge lamp driver test time. 5,910,712, Cl. 315-307.000.
Toyo Ink Manufacturing Co., Ltd.: *See*—
Endo, Atsushi; and Suda, Yasumasa, 5,910,585, Cl. 540-144.000.
Toyoda, Haruyasu: *See*—
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Toyosawa, Shinichi: *See*—
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Nakagawa, Norihisa, 5,909,727, Cl. 123-520.000.
Yamaoka, Masaaki; Abe, Tetsuya; Matsui, Hideaki; and Taga, Yutaka, 5,909,720, Cl. 123-179.300.
Yamasaki, Isamu; Tomita, Ichio; Honma, Kengo; and Takahashi, Sinichi, 5,909,849, Cl. 239-700.000.
Yamashita, Koichi; and Murachi, Mikio, 5,910,466, Cl. 502-300.000.
Yoshioka, Mamoru; and Ooi, Yasuhiro, 5,909,728, Cl. 123-585.000.
Trachte, Kenneth L.: *See*—
Halbert, Thomas R.; Riley, Kenneth L.; Trachte, Kenneth L.; and Vannauker, David L., 5,910,242, Cl. 208-263.000.
Trainor, Michael J.: *See*—
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Tran, Khoa Q., to Acme-Monaco Corporation. Archwire with posts. 5,910,008, Cl. 433-22.000.
Treadway, Patti Jean: *See*—
Skatrud, Paul Luther; Peery, Robert Brown; and Treadway, Patti Jean, 5,910,580, Cl. 536-22.100.
Tremmel, Lawrence: *See*—
Lo, Robin; Lee, Kanghoon; Tremmel, Lawrence; Stewart, David; and Anzai, Iwao Max, 5,911,044, Cl. 395-200.330.
Tremper, Alan William: *See*—
Pool, Colin Ripley; Roman, Robin Sherwood; Brightwell, Malcolm David; and Tremper, Alan William, 5,910,592, Cl. 546-269.700.
Trepka, William J.; Moczygemba, George A.; Stacy, Nathan E.; and Farrar, Ralph C., Jr., to Phillips Petroleum Company. Tapered block copolymers of monivinylarenes and conjugated dienes. 5,910,546, Cl. 525-314.000.
Trevitt, Donna Jean: *See*—
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Tri-Tech., Inc.: *See*—
Pulford, Robert, Jr.; Donnelly, Richard; and Peterson, Brian, 5,910,192, Cl. 74-479.010.
Trimberger, Stephen M., to Xilinx, Inc. Programmable gate array having shared signal lines for interconnect and configuration. 5,910,732, Cl. 326-38.000.
Triumph Controls, Inc.: *See*—
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Truitt, Lori A.; Corbin, Frank, III; Lobdell, Donn D.; Miller, Douglas P.; Manica, Keith; Eilers, George J.; Johnson, Steven H.; and Leppert, Lawrence L., to COBE Laboratories, Inc. Technique for extracorporeal treatment of blood. 5,910,252, Cl. 210-645.000.
Trukhlyaev, Peter S.: *See—*
Ponomarev-Stepnoy, Nikolai N.; Pavshook, Vladimir A.; Bebikh, Grigoriy F.; Khvostionov, Vladimir Ye.; Trukhlyaev, Peter S.; and Shvetsov, Ivan K., 5,910,971, Cl. 376-189.000.
TRW Inc.: *See—*
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Kolb, Andreas, 5,910,457, Cl. 442-203.000.
Tsai, Fu-Iya; and Etzel, Brian T., to Kimberly-Clark Worldwide, Inc. Biodegradable thermoplastic composition. 5,910,545, Cl. 525-178.000.
Tsai, James. Stepless expandable rod. 5,909,760, Cl. 16-115.000.
Tsai, Kuang-Lung: *See—*
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Tsao, Thomas. Method and apparatus for determining binocular affine disparity and affine invariant distance between two image patterns. 5,911,035, Cl. 395-21.000.
Tsien, Roger Y.: *See—*
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Tsubakimoto Chain Co.: *See—*
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Tsuchida, Atsushi: *See—*
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Tsugita, Ross S.; Maahs, Tracy D.; and Jang, Yue-Teh, to EMBOL-X, Inc. Percutaneous catheter and guidewire having filter and medical device deployment. 5,910,154, Cl. 606-200.000.
Tsuji, Takeshi, to Sumitomo Wiring Systems, Ltd. Connector. 5,910,028, Cl. 439-489.000.
Tsujimoto, Takahiko, to Minolta Co., Ltd. Fixing device and image forming apparatuse using the same. 5,911,094, Cl. 399-69.000.
Tsukamoto, Katsuro; and Ishikawa, Susumu, to Shinsozaihanbai Kabushiki Kaisha; and Akiyama Gasket Kabushiki Kaisha. Clad steel plate. 5,910,377, Cl. 428-609.000.
Tsukuda, Hiroshi, to Sony Corporation. Display label and method of producing same. 5,910,349, Cl. 428-42.300.
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Watanabe, Masayuki; Sugano, Toshio; Tsukui, Seiichiro; Ono, Takashi; and Wakashima, Yoshiaki, 5,910,685, Cl. 257-777.000.
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Tugutaka, Ichikawa; and Satoshi, Umemoto, to Kabushiki Kaisha Tokyo Ichizuru. Binding for snowboards. 5,909,886, Cl. 280-14.200.
Tukey, John W.; and Pedersen, Jan O., to Xerox Corporation. Method of ordering document clusters given some knowledge of user interests. 5,911,140, Cl. 707-5.000.
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Tulpule, Sharayu, to Carrier Corporation. Prediction of chiller compressor motor overheating. 5,911,127, Cl. 702-190.000.
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Uchida, Hiroki; Kiso, Masayuki; Nakamura, Takayuki; Kamitamari, Tohru; Susuki, Rumiko; and Shimizu, Koichiro, to C. Uyemura & Co., Ltd. Electroless nickel plating solution and method. 5,910,340, Cl. 427-437.000.
Uchiyama, Yukinaka, to Ricoh Company, Ltd. Character recognition method *and system. 5,911,005, Cl. 382-187.000.*
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Ueda, Kazuhiko; Kotani, Jun; Yano, Ayako; and Hirose, Toshifumi, to Kaneka Corporation. Curable resin composition with improved adhesion of coatings. 5,910,555, Cl. 528-34.000.
Ueda, Naoki; Noguchi, Tadayuki; Sakai, Shuji; Tanaka, Kuniaki; and Kittaka, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Electric Semiconductor Software Co., Ltd. Method of drawing figure such as polygon and display control device. 5,910,807, Cl. 345-515.000.
Ueda, Sadanobu: *See—*
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Ueda, Takamasa; Natsuhara, Toshiya; Asano, Masaki; and Hotomi, Hideo, to Minolta Co., Ltd. Ink for ink-jet recording containing alkylene oxide adduct of acetylene glycol. 5,910,211, Cl. 106-31.430.
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Ueno, Yasushi, to Murata Manufacturing Co., Ltd. Multilayered electronic element. 5,910,881, Cl. 361-313.000.
Uhlig, Robert P., to Chrysler Corporation. Twin ramp brake pad reaction member. 5,909,785, Cl. 188-250.00G.
Uland, Michael J.: *See—*
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Ullrich, Stephen E., to Board Of Regents, The University Of Texas System. UV-induced factor for immunosuppression. 5,910,309, Cl. 424-198.100.
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Kang, Hongling, 5,910,696, Cl. 310-236.000.
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Jorkama, Marko; and Mäkelä, Jarmo, 5,909,855, Cl. 242-414.100.
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Deleys, Robert J.; Pollet, Dirk; Maertens, Geert; and Van Heuverswijn, Hugo, 5,910,404, Cl. 435-5.000.
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Mittendorf, Joachim; Fey, Peter; Junge, Bodo; Kaulen, Johannes; van Laak, Kai; Meier, Heinrich; and Schohe-Loop, Rudolf, 5,910,593, Cl. 546-278.400.
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Halbert, Thomas R.; Riley, Kenneth L.; Trachte, Kenneth L.; and Vannauker, David L., 5,910,242, Cl. 208-263.000.
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Dings, Jacobus M.; Horne, Remko; and Van Veen, Gerardus N. A., 5,910,396, Cl. 430-323.000.

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Blecha, Thomas, 5,909,867, Cl. 251-328.000.

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Marks, Jeffrey R.; Vaughn, James P.; and Inglehart, James D., 5,910,583, Cl. 536-24.500.

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Berg, Gary; Taubman, Dmitriy; and Verchivker, Jakov, 5,910,233, Cl. 203-10.000.

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Yeske, Robert E.; Verhagen, Robert A.; and Mendez, Joaquin Roberto, 5,910,579, Cl. 536-18.500.

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Vetrotex France: *See*—
Gasca, Jean-Philippe; Arpin, Michel; Malgrange, Denis; and Caurant, Daniel, 5,910,461, Cl. 501-35.000.

Vical Incorporated: *See*—
Nabel, Gary J.; Nabel, Elizabeth G.; Lew, Denise; and Marquet, Magda, 5,910,488, Cl. 514-44.000.

Vicente, Mutya: *See*—
Gupta, Subhash; and Vicente, Mutya, 5,910,453, Cl. 438-717.000.

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Busick, Rickey L.; and Steinmetz, Mark F., 5,910,199, Cl. 82-1.110.

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Shimizu, Kyoichi; Maruyama, Toshihiro; and Kizuki, Takafumi, 5,911,130, Cl. 704-500.000.

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Whittaker, James Robert, 5,910,795, Cl. 345-127.000.

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Kraft, Kurt R.; Vieth, Gary L.; and Louden, Peter J., 5,910,094, Cl. 60-39.091.

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Jain, Ramesh; Horowitz, Bradley; Fuller, Charles E.; Gupta, Amarnath; Bach, Jeffrey R.; and Shu, Chiao-fe, 5,911,139, Cl. 707-3.000.

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McClure, Richard J.; and Massengill, R. Kemp, 5,910,834, Cl. 351-224.000.

Visible Genetics, Inc.: *See*—
Garey, Caroline Elizabeth; and Leushner, James, 5,910,413, Cl. 435-6.000.

Visionex, Inc.: *See*—
Wach, Michael Leonard; and Gervasio, Gregory J., 5,911,017, Cl. 385-12.000.

Visser, Robert G.: *See*—
Christianson, Todd J.; Nguyen, David D.; and Visser, Robert G., 5,910,471, Cl. 51-295.000.

Vistech Corporation: *See*—
Phillips, Dennis D.; and Jones, Brian H., 5,910,844, Cl. 356-375.000.

Visteon Technologies, LLC: *See*—
Zuber, Gary, 5,910,177, Cl. 701-202.000.

Vita Zahnfabrik H. Rauter GmbH & Co. KG: *See*—
Thiel, Norbert; and Datzmann, Gabriele, 5,910,273, Cl. 264-16.000.

Vivant, Colette: *See*—
Grenot, Thierry; Vivant, Colette; and Letourneur, Patrick, 5,910,942, Cl. 370-236.000.

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Keefer, Larry K.; Saavedra, Joseph E.; Doherty, Paul C.; Hanamoto, Mark S.; and Place, Virgil A., 5,910,316, Cl. 424-433.000.

Vlatkovic, Vlatko: *See*—
Lyons, James Patrick; Vlatkovic, Vlatko; Espelage, Paul Martin; and Esser, Albert Andreas Maria, 5,910,892, Cl. 363-98.000.

Vloka, Jerry Darius: *See*—
Hadzic, Admir; and Vloka, Jerry Darius, 5,910,135, Cl. 604-251.000.

VLSI Technology, Inc.: *See*—
Hamzehdoost, Ahmad; and Martin, Robert J., 5,910,686, Cl. 257-778.000.
Jay, Christian Y.; and Poirot, Franck J., 5,910,958, Cl. 371-27.100.
Weling, Milind Ganesh, 5,910,022, Cl. 438-692.000.

Vogel, Hans Heiner; and Kägi, Hans-Rudolf, to SLM Schweizerische Lokomotiv - Und Maschinenfabrik AG. Bogie for a railway vehicle with adjustable wheel sets and railway vehicle with such a bogie. 5,909,711, Cl. 105-168.000.

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Hill, David E.; Johnson, Karen A.; Kinzler, Kenneth W.; and Vogelstein, Bert, 5,910,418, Cl. 435-7.230.

Voigtlaender, Dirk: *See*—
Boegner, Walter; Haak, Karl-Ernst; Krutzsch, Bernd; Verrelst, Wim; Voigtlaender, Dirk; Wenninger, Guenter; and Wirbeleit, Friedrich, 5,910,097, Cl. 60-278.000.

Voith Sulzer Papiermaschinen GmbH: *See*—
Steiner, Karl; Straub, Karlheinz; Wolf, Robert; Meinecke, Albrecht; Chau-Huu, Tri; and Oechsle, Markus, 5,909,942, Cl. 34-117.000.

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Kwan, Katherine W.; and Voois, Paul A., 5,910,827, Cl. 348-845.100.

Voorberg, Johannes J., to Immuno AG. Hybrid proteins with modified activity. 5,910,481, Cl. 514-12.000.

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Voss, Mark: *See*—
Reinke, Michael J.; and Voss, Mark, 5,910,167, Cl. 62-525.000.

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Myers, David J.; and Lewis, James D., 5,910,168, Cl. 623-1.000.
Noddin, David B., 5,910,255, Cl. 216-18.000.

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Wachter, Robert: *See*—
Bender, Klaus; Wachter, Robert; and Fiedler, Bernd, 5,910,082, Cl. 52-144.000.

Wacker-Chemie GmbH: *See*—
Mautner, Konrad; and Schuhbeck, Erwin, 5,910,234, Cl. 203-18.000.

Wada, Osamu: *See*—
Kobayashi, Kei-Ichiro; Kato, Tomoaki; Takada, Yoshio; Wada, Osamu; Kobayashi, Masahiro; Furuse, Naomi; Fujiwara, Yukio; Shichimiya, Shoichi; and Ishibe, Shinji, 5,910,761, Cl. 338-21.000.

Wada, Tetsuya; and Mizumoto, Toru, to Konami Co., Ltd. Competition game apparatus. 5,910,046, Cl. 463-6.000.

Wada, Yasuhiro: *See*—
Urata, Hisao; Itagaki, Hiroaki; Takahashi, Eitaro; Wada, Yasuhiro; Tanaka, Yoshiyuki; and Ogino, Yasukazu, 5,910,600, Cl. 558-162.000.

Waegner, Ralf: *See*—
Gerlach, Hans-Joachim; Will, Heinz Ronald; Waegner, Ralf; and Schlachter, Werner, 5,910,645, Cl. 177-1.000.

Waferscale Integration, Inc.: *See*—
Kazerounian, Reza; Irani, Rustom F.; and Eitan, Boaz, 5,910,016, Cl. 438-258.000.

Wakashima, Yoshiaki: *See*—
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Yazaki, Akira; Yoshida, Jiro; Niino, Yoshiko; Ohshita, Yoshihiro; Hayashi, Norihiro; Amano, Hirotaka; Hirao, Yuzo; and Kuramoto, Yasuhiro, 5,910,498, Cl. 514-255.000.

Waldi, Joachim: *See*—
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Wallace, Mark A.: *See*—
Wallace, Walter J., Jr.; and Wallace, Mark A., 5,909,817, Cl. 212-275.000.

Wallace, Troy B. Fiber optic display screen assembly and method for making a fiber optic screen. 5,911,024, Cl. 385-120.000.

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Beffa, Ray J.; Waller, William K.; Cloud, Eugene H.; Farnworth, Warren M.; and Nevill, Leland R., 5,910,921, Cl. 365-201.000.

Wallis, Nicola Gail, to SmithKline Beecham Corporation; and SmithKline Beecham p.l.c. Compounds. 5,910,572, Cl. 530-350.000.

Walsh, James Edward: *See*—
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Walter, Frank Leonard: *See*—
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Walters, Bronwen: *See*—
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Wamprecht, Christian; Wilmes, Oswald; Kirchmeyer, Stephan; and Mazanek, Jan, to Bayer Aktiengesellschaft. Dispersing agents for aqueous coatings compositions. 5,910,556, Cl. 528-49.000.

Wang, Chih Chiang, to Camel Furniture Co., Ltd. Chair-mount adjustable keyboard supporting assembly. 5,909,864, Cl. 248-289.110.

Wang, Hsien-Chang: *See*—
Patel, Raman; Abdou-Sabet, Sabet; and Wang, Hsien-Chang, 5,910,543, Cl. 525-166.000.

Wang, James H.: *See*—
Luan, Chung-Chen; Chong, Siu-Ming; Wang, James H.; Wong, John; and Yeh, Gong-Jong, 5,911,149, Cl. 711-147.000.

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Wang, Shanping: *See*—
Miller, W. Allen; and Wang, Shanping, 5,910,628, Cl. 800-205.000.

Wang, Shouming: *See*—
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Wangnick, Carsten; and Merrath, Peter, to Heinrich Mack Nachf. Crystal modification of 2,4-diamino-6-hydroxymethylpteridine hydrobromide. 5,910,588, Cl. 544-260.000.

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Ward, Calvin B.: *See*—
Lichtenwalter, Kay; and Ward, Calvin B., 5,910,410, Cl. 435-6.000.

Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, to BTG International Limited. Tubular materials. 5,910,346, Cl. 428-36.900.

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Waskiewicz, Walter P., to Torrington Company, The. Polymer bearing seal and sealed bearing. 5,909,880, Cl. 277-561.000.

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Wright, James; Wasti, Hamid; and Uecker, Darrin R., 5,911,036, Cl. 395-94.000.

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Watanabe, Hideaki: *See*—
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Watanabe, Hiroyuki, to NEC Corporation. PLL circuit with non-volatile memory. 5,910,741, Cl. 327-150.000.

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Watanabe, Jiro: *See*—
Ozawa, Osamu; Kawazura, Tetsuji; Kuroda, Noriaki; Aoyagi, Yoshihiro; Watanabe, Jiro; and Kawaguchi, Gou, 5,910,544, Cl. 525-178.000.

Watanabe, Keiji: *See*—
Nozaki, Koji; Yano, Ei; Watanabe, Keiji; Namiki, Takahisa; and Igarashi, Miwa, 5,910,392, Cl. 430-270.100.

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Shiba, Katsuhiro; Gotoh, Minoru; Watanabe, Masatoshi; Kakuta, Yoshiyuki; and Okuda, Kenji, 5,910,939, Cl. 369-178.000.

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Whatley, Terry; Nowshadi, Saeed; Linden, Peter van der; Gianni, Robert R.; and Melanson, Ron, to Sun Microsystems, Inc. Method and apparatus for selectively inhibiting power shutdowns based upon the number of power shutdowns that an electrical device has been experienced. 5,911,081, Cl. 395-750.030.

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Pauza, William Vito, 5,910,347, Cl. 428-36.900.

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White, Curtis D.: *See—*
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Wilson, Bruce B.: *See—*
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Lajoie, M. Stephen; Joseph, Amy L.; Jones, Keith A.; and Winston, Anthony E., 5,910,323, Cl. 424-717.000.

Winzen, Debra, to Calvert Holdings LLC. One-piece machinable index divider with integral pocket. 5,909,979, Cl. 402-79.000.

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Lyons, Christopher Francis; Spinillo, Gary Thomas; and Wood, Robert Lavin, 5,910,337, Cl. 427-259.000.

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Xaar Technology Limited: *See*—
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Yajima, Akitaka; Fujimori, Motoyuki; Furuhata, Mutsuya; Ushiyama, Tomiyoshi; Koide, Terunaga; Hashizume, Toshiaki; Miyashita, Kiyoshi; Harima, Hiroshi; and Naito, Keijiro, to Seiko Epson Corporation. Projection-type display apparatus. 5,909,944, Cl. 353-81.000.

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Akaogi, Takao; Ogawa, Yasushige; Kajita, Tatsuya; Watanabe, Hisayoshi; and Yamashita, Minoru, 5,910,916, Cl. 365-185.290.

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Yanai, Yuichi; Hirai, Takayuki; Oba, Masayoshi; Ikeda, Kiyoshi; Takagi, Yasushi; Ishikawa, Takeo; Harada, Kazuhiko; Iida, Hirotaka; Arakawa, Kazuhiko; Ii, Masazumi; and Nakamura, Yuzo, to Nisshinbo Industries, Inc. Method for forming durable creases in cellulosic fiber textile. 5,910,279, Cl. 264-282.000.

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LIST OF REISSUE PATENTEES

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NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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CLASSIFICATION OF PATENTS

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CLASS 36

7.6 5,909,945
50.1 5,909,946
50.5 5,909,947
102 5,909,948

CLASS 37

235 5,909,960
444 5,909,961
456 5,909,962

CLASS 38

1 B 5,909,964

CLASS 40

449 5,909,971

CLASS 42

70.07 5,910,002
70.11 5,910,003

CLASS 43

21.2 5,910,004
130 B1 203,108

CLASS 44

535 5,910,454

CLASS 47

58 5,910,050
72 5,910,051

CLASS 49

25 5,910,075
55 5,910,076
460 5,910,077

CLASS 51

295 5,910,471

CLASS 52

79.1 RE. 36,226
144 5,910,082
171.1 5,910,083
204.1 5,910,084
291 5,910,085
306 5,910,086
371 5,910,087
741.4 5,910,088

CLASS 53

472 5,910,089
504 5,910,090

CLASS 55

385.2 5,910,598

CLASS 56

16.7 5,910,091
119 5,910,092

CLASS 60

39.091 5,910,094
272 5,910,095
274 5,910,096
278 5,910,097
397 5,910,098
599 5,910,099
651 5,910,100

CLASS 62

133 5,910,157
148 5,910,158
158 5,910,159
195 5,910,160
211 5,910,161
246 5,910,162
256 5,910,163
344 5,910,164
474 5,910,165
511 5,910,166
525 5,910,167

CLASS 65

60.5 5,910,620

CLASS 72

21.5 5,910,183
201 5,910,184
202 5,910,185
447 5,910,186

CLASS 73

1.12 5,911,154
40.5 R 5,911,155
160 5,910,187
290 R 5,910,188
295 5,910,189
504.16 5,911,156
514.16 5,911,157
583 5,911,158
590 5,911,159
602 5,911,160
618 5,911,161
718 5,911,162
738 5,911,163
815 5,911,164
827 5,911,165
833 5,911,166

CLASS 74

329 5,910,190
473.14 5,910,191
479.01 5,910,192
489 5,910,193
500.5 5,910,194
603 5,910,195

CLASS 75

399 5,910,621
540 B1 518,422

CLASS 81

60 5,910,196
124.6 5,910,197
462 5,910,198

CLASS 82

1.11 5,910,199
126 5,910,200
129 5,910,201

CLASS 83

522.15 5,910,202
651.1 5,910,203

CLASS 84

236 5,911,167
291 5,911,168
461 5,911,169
661 5,911,170
731 5,911,171

CLASS 87

31 5,910,204

CLASS 89

5 5,911,172
185 5,911,173

CLASS 96

135 5,910,637

CLASS 99

315 5,910,205
330 5,910,206
349 5,910,207
353 5,910,208
450 5,910,209
483 5,910,210

CLASS 100

214 5,909,705

CLASS 101

126 5,909,706
148 5,909,707
177 5,909,708
405 5,909,709

CLASS 104

23.2 5,909,710

CLASS 105

168 5,909,711

CLASS 106

31.43 5,910,211
281.1 5,910,212
436 5,910,213
465 5,910,214
772 5,910,215

CLASS 108

51.3 5,909,712
119 5,909,713

CLASS 110

233 RE. 36,222

CLASS 111

101 5,909,714

CLASS 114

65 R 5,909,715

CLASS 117

218 5,910,216

CLASS 118

112 A 5,910,217
719 5,910,218
5,910,219
723 FI 5,910,220
723 R 5,910,221

CLASS 119

14.08 5,909,716
58 5,909,717
172 5,909,718

CLASS 123

179.3 5,909,720
193.2 5,909,721
357 5,909,722
406 5,909,723
436 5,909,724
516 5,909,725
520 5,909,726
5,909,727
585 5,909,728

CLASS 126

25 R 5,909,729
343.5 A 5,909,730

CLASS 128

205.24 RE. 36,223
5,909,731
206.24 5,909,732
869 5,909,733
898 5,909,734

CLASS 131

257 5,909,735
331 5,909,736

CLASS 132

116 5,909,737
293 5,909,738
308 5,909,739
318 5,909,740
321 B1 922,936

CLASS 134

1 5,909,741
3 5,909,742
10 5,909,743
38 5,909,744
42 5,909,745

CLASS 135

25.1 5,909,746

CLASS 137

492 5,909,747
527 5,909,748
857 5,909,749

CLASS 139

11 5,909,750

CLASS 140

123.6 5,909,751

CLASS 141

38 5,909,752
330 5,909,753

CLASS 148

96 5,910,222
210 5,910,223

CLASS 149

18 5,910,638

CLASS 152

209 R 5,909,756
543 5,909,757

CLASS 156

178 5,910,224
229 5,910,225
304.5 5,910,226
384 5,910,227
450 5,910,228
458 5,910,229
470 5,910,230

CLASS 160

71 5,909,761
201 5,909,762
269 5,909,763

CLASS 162

145 5,910,231

CLASS 164

481 5,909,764
516 5,909,765

CLASS 165

70 5,909,766
166 5,909,767

CLASS 166

77.1 5,909,768
115 5,909,769
117.6 5,909,770
120 5,909,771
250.16 5,909,772
277 5,909,773
312 5,909,774

CLASS 169

14 5,909,775
26 5,909,776
43 5,909,777

CLASS 172

111 5,909,778

CLASS 174

35 MS 5,910,639
50 5,910,640
52.4 5,910,641
57 5,910,642
87 5,910,643
260 5,910,644

CLASS 175

50 5,909,779

CLASS 177

1 5,910,645
25.18 5,910,646
210 FP 5,910,647

CLASS 180

9.58 5,909,780
206 5,909,781
309 5,909,782

CLASS 181

175 5,910,648

CLASS 182

146 5,909,783

CLASS 185

10 5,909,784

CLASS 188

250 G 5,909,785

CLASS 192

84.96 5,909,787
88 B 5,909,788
115 5,909,789
213.22 5,909,790
223.4 5,909,791

CLASS 194

206 5,909,792
210 5,909,793
216 5,909,794
243 5,909,795

CLASS 198

369.2 5,909,796
370.02 5,909,797
603 5,909,798
622 5,909,799
803.4 5,909,800

CLASS 200

38 R 5,910,649
400 5,910,650
516 5,909,804

CLASS 203

9 5,910,232
10 5,910,233
18 5,910,234

CLASS 204

192.15 RE. 36,224
192.32 5,910,235
280 5,910,236
541 5,910,237

CLASS 205

634 5,910,238
781 5,910,239

CLASS 206

308.1 5,909,805
320 5,909,806
387.13 5,909,807
451 5,909,808
525 5,909,809
576 5,909,810
581 5,909,811
723 5,909,812

CLASS 208

113 5,910,240
251 H 5,910,241
263 5,910,242

CLASS 209

128 5,909,813
534 5,909,814
653 5,909,815

CLASS 210

104 5,910,243
138 5,910,244
170 5,910,245
232 5,910,246
487 5,910,247
608 5,910,248
617 5,910,249
636 5,910,250
638 5,910,251
645 5,910,252
682 5,910,253
703 5,910,254

CLASS 211

85.8 5,909,816

CLASS 212

275 5,909,817

CLASS 216

18 5,910,255
24 5,910,256
93 5,910,257

CLASS 219

60 R 5,910,258
109 5,910,259
121.67 5,910,260
121.71 5,910,261
121.77 5,910,262
221 5,910,263
388 B1 565,917
411 5,910,264
454 5,910,265
528 5,910,266
548 5,910,267
728 5,910,268

CLASS 220

601 5,909,818
623 5,909,819
711 5,909,820
739 5,909,821

CLASS 221

25 5,909,822
129 5,909,823

CLASS 222

1 5,909,824
67 5,909,825
78 5,909,826
83.5 5,909,827
103 5,909,828
232 5,909,829
327 5,909,830

CLASS 223

112 5,909,831

CLASS 224

547 5,909,832
577 5,909,833
587 5,909,834

CLASS 226

112 5,909,835

CLASS 227

8 5,909,836

CLASS 228

6.2 5,909,837
125 5,909,838
248.1 5,909,839

CLASS 229

120.17 5,909,840
125.15 5,909,841
404 5,909,842

CLASS 235

462.25 5,910,651
492 5,910,652

CLASS 236

66 5,909,843

CLASS 239

14.2 5,909,844
44 5,909,845
106 5,909,846
116 5,909,847
252 5,909,848
700 5,909,849

CLASS 242

348.1 5,909,853
356 5,909,854
414.1 5,909,855
530 5,909,856

CLASS 244

29 5,909,857
36 5,909,858
153 A 5,909,859
173 5,909,860

CLASS 248

80 5,909,861
117.4 5,909,862
235 5,909,863
289.11 5,909,864
346.03 5,909,865
429 5,909,866

CLASS 250

214 AL 5,910,653
269.3 5,910,654
281 5,910,655
287 5,910,656
310 5,910,657
492.22 5,910,658
495.1 5,910,659
559.22 5,910,660
573 5,910,661

CLASS 251

328 5,909,867

CLASS 252

73 5,910,269
182.3 5,910,270
299.01 5,910,271
500 5,910,272

CLASS 254

211 5,909,868
264 5,909,869
325 5,909,870

CLASS 257

33 5,910,662
81 5,910,663
212 5,910,664
284 5,910,665
288 5,910,666
306 5,910,667
329 5,910,668
339 5,910,669
343 5,910,670
344 5,910,671
347 5,910,672
355 5,910,673
369 5,910,674
370 5,910,675
378 5,910,676
393 5,910,677
529 5,910,678
622 5,910,679
650 5,910,680
666 5,910,681
685 5,910,682
723 5,910,683
758 5,910,684
777 5,910,685
778 5,910,686
784 5,910,687

CLASS 264

16 5,910,273
41 5,910,274
49 5,910,275
101 5,910,276
127 5,910,277
138 5,910,278
282 5,910,279
296 5,910,280
343 5,910,281
400 5,910,282
536 5,910,283
564 5,910,284

CLASS 270

58.07 5,909,871

CLASS 271

116 5,909,872
270 5,909,873

CLASS 273

146 5,909,874
269 5,909,875
309 5,909,876
402 5,909,877

CLASS 277

398 5,909,878
399 5,909,879
561 5,909,880
627 5,909,881

CLASS 279

4.04 5,909,882

CLASS 280

11.22 5,909,885
14.2 5,909,886
32.7 5,909,887
124.166 5,909,888
229 5,909,889
284 5,909,890
422 5,909,891
477 5,909,892
607 5,909,893
623 5,909,894
743.1 5,909,895
828 5,909,896

CLASS 281

22 5,909,897
30 5,909,898

CLASS 283

81 5,909,899
115 5,909,900

CLASS 285

38 5,909,901
322 5,909,902
330 5,909,903
405 5,909,904

CLASS 290

55 5,910,688

CLASS 292

199 5,909,918
359 5,909,919

CLASS 296

24.1 5,909,920
100.1 5,909,921

CLASS 297

188.18 5,909,922
285 5,909,923
300.4 5,909,924
314 5,909,925
354.12 5,909,926
468 5,909,927

CLASS 301

110.5 5,909,931

CLASS 307

64 5,910,689
141 5,910,690

CLASS 310

12 5,910,691
13 5,910,692
67 R 5,910,693
89 5,910,694
90.5 5,910,695
236 5,910,696
254 5,910,697
316 5,910,698
320 5,910,699
338 5,910,700

CLASS 312

135 5,909,932
140.1 5,909,933
223.3 5,909,934
333 5,909,935
334.1 5,909,936
405.1 5,909,937

CLASS 313

309 5,910,701
407 5,910,702
482 5,910,703
495 5,910,704
496 5,910,705
498 5,910,706
579 5,910,707

CLASS 315

209 R 5,910,708
225 5,910,709
248 5,910,710
291 5,910,711
307 5,910,712
308 5,910,713

CLASS 318

139 5,910,714
254 5,910,715
5,910,716
283 5,910,717
447 5,910,718
560 5,910,719
623 5,910,720
649 5,910,721

CLASS 320

104 RE. 36,225
5,910,722
119 5,910,723
141 5,910,724

CLASS 323

313 5,910,725
315 5,910,726

CLASS 324

158.1 5,910,727
309 5,910,728
627 5,910,729

CLASS 326

24 5,910,730
30 5,910,731
38 5,910,732
41 5,910,733
81 5,910,734
93 5,910,735
126 5,910,736

CLASS 327

89 5,910,737
108 5,910,738
143 5,910,739
149 5,910,740
150 5,910,741
165 5,910,742
172 5,910,743
263 5,910,744
356 5,910,745
379 5,910,746
415 5,910,747
432 5,910,748
541 5,910,749
544 5,910,750
560 5,910,751

CLASS 329

341 5,910,752

CLASS 331

17 5,910,753

CLASS 333

17.3 5,910,754
24 C 5,910,755
133 5,910,756

CLASS 335

9 5,910,757
35 5,910,758
78 5,910,759
167 5,910,760

CLASS 338

21 5,910,761

CLASS 340

146.2 5,910,762
286.02 5,910,763
479 5,910,764
517 5,910,765
539 5,910,766
557 5,910,767
568.2 5,910,768
568.5 5,910,769
572.5 5,910,770
573.1 5,910,771
573.6 5,910,772
576 5,910,773
637 5,910,774
815.4 5,910,775
825.35 5,910,776
825.44 5,910,777
5,910,778
825.54 5,910,779
825.79 5,910,780
870.37 5,910,781
995 5,910,782

CLASS 341

60 5,910,783
176 5,910,784

CLASS 342

25 5,910,785
70 5,910,786
165 5,910,787
357 5,910,788
5,910,789

CLASS 343

895 5,910,790

CLASS 345

74 5,910,791
5,910,792
100 5,910,793
126 5,910,794
127 5,910,795
153 5,910,796
157 5,910,797
163 5,910,798
333 5,910,799
336 5,910,800
339 5,910,801
347 5,910,802
357 5,910,803
419 5,910,804
467 5,910,805
508 5,910,806
515 5,910,807

CLASS 347

30 5,910,808
72 5,910,809
88 5,910,810
104 5,910,811
106 5,910,812
215 5,910,813

CLASS 348

8 5,910,814
14 5,910,815
65 5,910,816
159 5,910,817
222 5,910,818
387 5,910,819
446 5,910,820
468 5,910,821
476 5,910,822
630 5,910,823
714 5,910,824
722 5,910,825
781 5,910,826
845.1 5,910,827

CLASS 349

25 5,910,828
110 5,910,829
158 5,910,830

CLASS 351

158 5,910,831
169 5,910,832
208 5,910,833
224 5,910,834

CLASS 353

81 5,909,944

CLASS 355

27 5,910,835

CLASS 356

124 5,910,836
213 5,910,837
312 5,910,838
345 5,910,839
351 5,910,840
369 5,910,841
5,910,842
375 5,910,843
5,910,844
376 5,910,845
381 5,910,846
401 5,910,847

CLASS 358

404 5,910,848
442 5,910,849
461 5,910,850

CLASS 359

110 5,910,851
156 5,910,852
200 5,910,853
273 5,910,854
285 5,910,855
291 5,910,856
338 5,910,857
534 5,910,858
554 5,910,859
691 5,910,860

CLASS 360

46 5,910,861
97.01 5,910,862
103 5,910,863
5,910,864
5,910,865
104 5,910,866
106 5,910,867
113 5,910,868
5,910,869
5,910,870
119 B1 302,790
122 5,910,871

CLASS 361

2 5,910,872
56 5,910,873
5,910,874
78 5,910,875
86 5,910,876
119 5,910,877
212 5,910,878
306.1 5,910,879
311 5,910,880
313 5,910,881
681 5,910,882
687 5,910,883
690 5,910,884
774 5,910,885

CLASS 362

37 5,909,949
94 5,909,950
111 5,909,951
205 5,909,952
260 5,909,953
307 5,909,954
368 5,909,955
473 5,909,956
546 5,909,957

CLASS 363

17 5,910,886
21 5,910,887
35 5,910,888
40 5,910,889
41 5,910,890
89 5,910,891
98 5,910,892

CLASS 364

167.02 5,910,893
468.01 5,910,894
468.28 5,910,895
479.01 5,910,896
488 5,910,897
489 5,910,898
491 5,910,899
578 5,910,900
5,910,901
5,910,902
5,910,903
724.011 5,910,904
724.08 5,910,905
724.09 5,910,906
724.1 5,910,907
5,910,908
724.19 5,910,909
761 5,910,910

CLASS 365

145 5,910,911
185.01 5,910,912
185.11 5,910,913
185.21 5,910,914
185.28 5,910,915
185.29 5,910,916
185.33 5,910,917
189.01 5,910,918
189.05 5,910,919
5,910,920
201 5,910,921
5,910,922
5,910,923
226 5,910,924
230.01 5,910,925
230.03 5,910,926
5,910,927
230.05 5,910,928

CLASS 366

76.2 5,909,958
339 5,909,959

CLASS 367

96 5,910,929

CLASS 368

156 5,910,930
251 5,910,931

CLASS 369

13 5,910,932
33 5,910,933
50 5,910,934
54 5,910,935
58 5,910,936
5,910,937
116 5,910,938
178 5,910,939
275.1 5,910,940
291 5,910,941

CLASS 370

236 5,910,942
279 5,910,943
311 5,910,944
324 5,910,945
328 5,910,946
332 5,910,947
335 5,910,948
337 5,910,949
342 5,910,950
351 5,910,951
395 5,910,952
5,910,953
401 5,910,954
5,910,955
445 5,910,956

CLASS 371

21.1 5,910,957
27.1 5,910,958
37.1 5,910,959
37.11 5,910,960
39.1 5,910,961

CLASS 372

6 5,910,962
98 5,910,963

CLASS 374

175 5,909,963

CLASS 375

200 5,910,964
220 5,910,965
259 5,910,966
265 5,910,967
279 5,910,968
341 5,910,969
377 5,910,970

CLASS 376

189 5,910,971

CLASS 378

54 5,910,972
57 5,910,973
138 5,910,974
207 5,910,975

CLASS 379

27 5,910,976
29 5,910,977
93.01 5,910,978
120 5,910,979
142 5,910,980
219 5,910,981
220 5,910,982
266 5,910,983
279 5,910,984
382 5,910,985

CLASS 380

23 5,910,986
24 5,910,987
5,910,988
25 5,910,989

CLASS 381

1 5,910,990
59 5,910,991
67 5,910,992
71.12 5,910,993
93 5,910,994
106 5,910,995
107 5,910,996
314 5,910,997
317 B1 425,481

CLASS 382

101 5,910,998
124 5,910,999
134 5,911,000
141 5,911,001
158 5,911,002
162 5,911,003
173 5,911,004
187 5,911,005
232 5,911,006
233 5,911,007
236 5,911,008
237 5,911,009
239 5,911,010
253 5,911,011
260 5,911,012
280 5,911,013
308 5,911,014

CLASS 384

43 5,909,965
115 5,909,966
295 5,909,967

CLASS 385

1 5,911,015
3 5,911,016
12 5,911,017
16 5,911,018
24 5,911,019
33 5,911,020
35 5,911,021
49 5,911,022
100 5,911,023
120 5,911,024
127 5,911,025
134 5,911,026
135 5,911,027

CLASS 386

2 5,911,028
46 5,911,029
55 5,911,030
77 5,911,031
95 5,911,032
109 5,911,033
124 5,911,034

CLASS 395

21 5,911,035
94 5,911,036
115 5,911,037
180 5,911,038
183.06 5,911,039
183.14 5,911,040
5,911,041
188.01 5,911,042
200.33 5,911,043
5,911,044
200.34 5,911,045
200.47 5,911,046
200.52 5,911,047
200.54 5,911,048
280 5,911,049
5,911,050
287 5,911,051
293 5,911,052
307 5,911,053
5,911,054
309 5,911,055
5,911,056
393 5,911,057
395 5,911,058
500 5,911,059
5,911,060
500.44 5,911,061
551 5,911,062
555 5,911,063
556 5,911,064
677 5,911,065
680 5,911,066
5,911,067
682 5,911,068
683 5,911,069
701 5,911,070
5,911,071
5,911,072
5,911,073
703 5,911,074
704 5,911,075
707 5,911,076
741 5,911,077
5,911,078
750.01 5,911,079
5,911,080
750.03 5,911,081
800.35 5,911,082
800.41 5,911,083
882 5,911,084

CLASS 396

62 5,911,085
96 5,911,086
378 5,911,087
387 5,911,088
435 5,911,089
611 5,911,090
615 5,911,091

CLASS 399

21 5,911,092
50 5,911,093
69 5,911,094
80 5,911,095
111 5,911,096
174 5,911,097
264 5,911,098
286 5,911,099
303 5,911,100
345 5,911,101

CLASS 400

109.1 5,909,972
208 5,909,973
283 5,909,974

CLASS 401

30 5,909,975
129 5,909,976
146 5,909,977
188 A 5,909,978

CLASS 402

79 5,909,979

CLASS 403

362 5,909,980

CLASS 404

112 5,909,981

CLASS 405

52 5,909,982
54 5,909,983
257 5,909,984

CLASS 408

1 R 5,909,985
181 5,909,986

CLASS 409

131 5,909,987
198 5,909,988

CLASS 410

44 5,909,989

CLASS 411

302 5,909,990
377 5,909,991
387 5,909,992
442 5,909,993

CLASS 414

217 5,909,994
5,909,995
563 5,909,996
751 5,909,997
752 5,909,998
809 5,909,999

CLASS 415

158 5,910,000

CLASS 418

1 5,910,001

CLASS 419

38 5,911,102

CLASS 420

72 5,910,285

CLASS 422

68.1 5,910,286
102 5,910,287
5,910,288
5,910,289
139 5,910,290
171 5,910,291

CLASS 423

210 5,910,292
213.7 5,910,293
235 5,910,294
337 5,910,295
420.2 5,910,296
490 5,910,297
592 5,910,298
706 5,910,299

CLASS 424

9.34 5,910,300
45 5,910,301
70.122 5,910,302
85.1 5,910,303
85.7 5,910,304
93.4 5,910,305
184.1 5,910,306
195.1 5,910,307
5,910,308
198.1 5,910,309
211.1 5,910,310
401 5,910,311
5,910,312
5,910,313
408 5,910,314
422 5,910,315
433 5,910,316
439 5,910,317
451 5,910,318
458 5,910,319
465 5,910,320
473 5,910,321
484 5,910,322
717 5,910,323

CLASS 425

345 5,910,324
456 5,910,325
526 5,910,326
572 5,910,327
595 5,910,328

CLASS 426

42 5,910,329
314 5,910,330
327 5,910,331
523 5,910,332

CLASS 427

69 5,910,333
96 5,910,334
127 5,910,335
240 5,910,336
259 5,910,337
290 5,910,338
376.2 5,910,339
437 5,910,340
534 5,910,341
573 5,910,342
597 5,910,343
599 5,910,344
600 5,910,345

CLASS 428

36.9 5,910,346
5,910,347
41.5 5,910,348
42.3 5,910,349
71 5,910,350
100 5,910,351
114 5,910,352
195 5,910,353
198 5,910,354
209 5,910,355
215 5,910,356
315.5 5,910,357
316.6 5,910,358
327 5,910,359
341 5,910,360
364 5,910,361
5,910,362
365 5,910,363
375 5,910,364
379 5,910,365
5,910,366
393 5,910,367
411.1 5,910,368
423.1 5,910,369
425.5 5,910,370
428 5,910,371
429 5,910,372
457 5,910,373
474.4 5,910,374
520 5,910,375
558 5,910,376
609 5,910,377

CLASS 429

42 5,910,378
59 5,910,379
100 5,910,380
197 5,910,381
218.1 5,910,382
231.4 5,910,383

CLASS 430

58 5,910,384
62 5,910,385
66 5,910,386
110 5,910,387
5,910,388
111 5,910,389
139 5,910,390
204 5,910,391
270.1 5,910,392
270.11 5,910,393
280.1 5,910,394
302 5,910,395
323 5,910,396
428 5,910,397
510 5,910,398
517 5,910,399
529 5,910,400
533 5,910,401
600 5,910,402

CLASS 431

126 5,910,005

CLASS 432

250 5,910,006

CLASS 433

17 5,910,007
22 5,910,008

CLASS 434

322 5,910,009

CLASS 435

4 5,910,403
5 5,910,404
5,910,595
6 5,910,406
5,910,407
5,910,408
5,910,409
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7.2 5,910,417
7.23 5,910,418
7.92 5,910,419
18 5,910,420
19 5,910,421
22 5,910,422
28 5,910,423
29 5,910,424
41 5,910,425
68.1 5,910,426
69.1 5,910,427
5,910,428
5,910,429
5,910,430
69.5 5,910,431
129 5,910,432
148 5,910,433
172.3 5,910,434
188 5,910,435
193 5,910,436
212 5,910,437
252.3 5,910,438
262.5 5,910,439
282 5,910,440
320.1 5,910,441
325 5,910,442
404 5,910,443
419 5,910,444

CLASS 436

5 5,910,445
21 5,910,446
111 5,910,447
133 5,910,448
165 5,910,449
181 5,910,450
501 5,910,451

CLASS 438

15 5,910,010
16 5,910,011
31 5,910,012
57 5,910,013
94 5,910,014
163 5,910,015
199 5,911,103
202 5,911,104
258 5,910,016
5,911,105
276 5,911,106
5,911,107
401 5,911,108
404 5,910,017
424 5,911,109
5,911,110
425 5,910,018
488 5,910,019
585 5,911,111
612 5,911,112
624 5,910,020
636 5,910,021
649 5,911,113
684 5,911,114
692 5,910,022
710 5,910,452
717 5,910,453

CLASS 439

41 5,910,023
71 5,910,024
76.1 5,910,025
471 5,910,026
489 5,910,027
5,910,028
522 5,910,029
620 5,910,030
752.5 5,910,031

CLASS 440

38 5,910,032
47 5,910,033

CLASS 441

70 5,910,034
74 5,910,035

CLASS 442

60 5,910,455
179 5,910,456
203 5,910,457
367 5,910,458

CLASS 445

23 5,910,036

CLASS 446

108 5,910,037
114 5,910,038
207 5,910,039

CLASS 451

5 5,910,040
28 5,910,041
39 5,910,042
285 5,910,043

CLASS 453

32 5,910,044

CLASS 454

186 5,910,045

CLASS 455

63 5,911,115
83 5,911,116
90 5,911,117
156.1 5,911,118
402 5,911,119
417 5,911,120
418 5,911,121
432 5,911,122
554 5,911,123
570 5,911,124

CLASS 463

6 5,910,046
17 5,910,047
25 5,910,048

CLASS 464

80 5,910,049

CLASS 470

6 5,910,052

CLASS 473

257 5,910,053
302 5,910,054
305 5,910,055
5,910,056
353 5,910,057
481 5,910,058
594 5,910,059

CLASS 475

28 5,910,060
149 5,910,061
159 5,910,062
5,910,063
199 5,910,064
207 5,910,065
336 5,910,066

CLASS 477

92 5,910,067
109 5,910,068
5,910,069

CLASS 482

4 5,910,070
13 5,910,071
51 5,910,072
129 5,910,073
141 5,910,074

CLASS 493

309 5,910,078
352 5,910,079

CLASS 501

8 5,910,459
27 5,910,460
35 5,910,461
80 5,910,462

CLASS 502

107 5,910,463
111 5,910,464
209 5,910,465
300 5,910,466

CLASS 507

202 5,910,467

CLASS 508

332 5,910,468
422 5,910,469
468 5,910,470

CLASS 510

124 5,910,472
191 5,910,473
238 5,910,474
5,910,475
447 5,910,476
503 5,910,477

CLASS 514

9 5,910,478
5,910,479
12 5,910,480
5,910,481
5,910,482
5,910,483
25 5,910,484
34 5,910,485
44 5,910,486
5,910,487
5,910,488
54 5,910,489
5,910,490
63 5,910,491
114 5,910,492
170 5,910,493
211 5,910,494
221 5,910,495
237.5 5,910,496
253 5,910,497
255 5,910,498
5,910,499
275 5,910,500
294 5,910,501
330 5,910,502
372 5,910,503
376 5,910,504
381 5,910,505
397 5,910,506
400 5,910,507
432 5,910,508
456 5,910,509
502 5,910,510
533 5,910,511
617 5,910,512
649 5,910,513

CLASS 521

40.5 5,910,514
109.1 5,910,515

CLASS 522

39 5,910,516
78 5,910,517

CLASS 523

106 5,910,518
5,910,519
128 5,910,520
145 5,910,521
168 5,910,522
213 5,910,523
215 5,910,524

CLASS 524

267 5,910,525
270 5,910,526
274 5,910,527
315 5,910,528
394 5,910,529
534 5,910,530
556 5,910,531
5,910,532
560 5,910,533
575 5,910,534
588 5,910,535
590 5,910,536

CLASS 525

64 5,910,537
67 5,910,538
88 5,910,539
92 B 5,910,540
99 5,910,541

	5,910,542
166	5,910,543
178	5,910,544
	5,910,545
314	5,910,546
332.8	5,910,547
438	5,910,548

CLASS 526

217	5,910,549
237	5,910,550
238.2	5,910,551
247	5,910,552
319	5,910,553
320	5,910,554

CLASS 528

34	5,910,555
49	5,910,556
70	5,910,557
125	5,910,558
137	5,910,559
196	5,910,560
	5,910,561
201	5,910,562
272	5,910,563
310	5,910,564
328	5,910,565
480	5,910,566
491	5,910,567

CLASS 530

324	5,910,568
	5,910,569
328	5,910,570
350	5,910,571
	5,910,572
387.3	5,910,573
388.22	5,910,574
388.24	5,910,575
388.25	5,910,576

CLASS 534

742	5,910,577
850	5,910,578

CLASS 536

18.5	5,910,579
22.1	5,910,580
23.2	5,910,581
23.5	5,910,582
24.5	5,910,583
25.4	5,910,584

CLASS 540

144	5,910,585

CLASS 544

34	5,910,586
216	5,910,587
260	5,910,588
277	5,910,589
345	5,910,590

CLASS 546

242	5,910,591
269.7	5,910,592
278.4	5,910,593

CLASS 548

236	5,910,594
300.7	5,910,595
377.1	5,910,596
	5,910,597

CLASS 556

76	5,910,599

CLASS 558

162	5,910,600
354	5,910,601

CLASS 560

172	5,910,602
205	5,910,603

CLASS 562

435	5,910,604
473	5,910,605
495	5,910,606
532	5,910,607
	5,910,608
621	5,910,609

CLASS 564

315	5,910,610
497	5,910,611
	5,910,612

CLASS 568

428	5,910,613
615	5,910,614

CLASS 570

142	5,910,615
167	5,910,616
261	5,910,617

CLASS 585

510	5,910,618
513	5,910,619

CLASS 588

253	5,910,093

CLASS 600

3	5,910,101
	5,910,102
18	5,910,103
121	5,910,104
131	5,910,105
169	5,910,106
300	5,910,107
310	5,910,108
316	5,910,109
398	5,910,110
407	5,910,111
410	5,910,112
437	5,910,113
	5,910,114
443	5,910,115
	5,910,116
454	5,910,117
455	5,910,118
	5,910,119
509	5,910,120
562	5,910,121
573	5,910,122

CLASS 601

50	5,910,123
153	5,910,124

CLASS 602

58	5,910,125
75	5,910,126

CLASS 604

49	5,910,127
93	5,910,128
95	5,910,129
110	5,910,130
	5,910,131
162	5,910,132
164	5,910,133
	5,910,134
251	5,910,135
367	5,910,136
387	5,910,137
408	5,910,138

CLASS 606

1	5,910,139
3	5,910,140
61	5,910,141
	5,910,142
87	5,910,143
108	5,910,144
	5,910,145
122	5,910,146
131	5,910,147
144	5,910,148
157	5,910,149
159	5,910,150
161	5,910,151
167	5,910,152
184	5,910,153
200	5,910,154
213	5,910,155

CLASS 607

27	5,910,156

CLASS 623

1	5,910,168
2	5,910,169
	5,910,170
18	5,910,171
23	5,910,172
66	5,910,173

CLASS 701

57	5,910,175
59	5,910,176
202	5,910,177

CLASS 702

141	5,911,125
153	5,911,126
190	5,911,127

CLASS 704

221	5,911,128
272	5,911,129
500	5,911,130

CLASS 705

1	5,911,131
3	5,911,132
	5,911,133
9	5,911,134
36	5,911,135
	5,911,136
37	5,911,137

CLASS 707

3	5,911,138
	5,911,139
5	5,911,140
10	5,911,141
101	5,911,142
103	5,911,143
206	5,911,144
514	5,911,145
525	5,911,146

CLASS 709

232	5,910,178
252	5,910,179
301	5,910,180

CLASS 711

5	5,911,147
111	5,911,148
147	5,911,149
162	5,911,150
201	5,911,151
208	5,911,152
218	5,911,153

CLASS 714

718	5,910,181
786	5,910,182

CLASS 800

200	5,910,625
205	5,910,626
	5,910,627
	5,910,628
279	5,910,629
295	5,910,630
298	5,910,631
	5,910,632
312	5,910,633
	5,910,634
320.1	5,910,635
	5,910,636

CLASSIFICATION OF DESIGNS

D2—	642	410,687
	709	410,688
	857	410,689
	872	410,690
	902	410,691
	904	410,692
	962	410,693
	972	410,694
		410,695
D3—	201	410,769
	202	410,770
	208	410,771
	221	410,772
	228	410,773
	250	410,774
	254	410,775
	271	410,776
	279	410,777
	318	410,778
		410,779
D4—	104	410,787
		410,788
	127	410,789
	138	410,790
D5—	62	410,791
D6—	300	410,792
	315	410,793
	328	410,794
	333	410,795
	349	410,796
		410,797
	360	410,798
	366	410,799
	369	410,800
	373	410,801
	379	410,802
		410,803
	455	410,804
	464	410,805
	484	410,806
	492	410,807
	500	410,808
	505	410,809
	601	410,810
		410,811
D7—	334	410,812
	351	410,813
		410,814
	354	410,815
	384	410,816
	393	410,817
	403	410,818
	416	410,819
	549	410,820
	608	410,821
	638	410,822
	693	410,823
D8—	1	410,824
	14	410,825
	28	410,826
	35	410,827
	55	410,828
	61	410,829
	68	410,830
	97	410,831
	99	410,832
	105	410,833
	303	410,834
	354	410,835
	363	410,836
		410,837
D9—	305	410,838
	336	410,839
	418	410,840
		410,841
	435	410,842
	438	410,843
		410,844
	440	410,845
	455	410,846
	526	410,847
D10—	30	410,581
	31	410,582
	38	410,583
	57	410,584
	69	410,585
	106	410,586
	109	410,587
	114	410,588
D11—	40	410,589
	90	410,590
	132	410,591
	151	410,592
	158	410,593
	184	410,594
D12—	92	410,595
	120	410,596
		410,597
		410,598
		410,599
	146	410,600
	147	410,601
		410,602
	152	410,603
	169	410,604
		410,605
	176	410,606
	187	410,607
	192	410,608
	196	410,609
		410,610
		410,611
	203	410,612
	209	410,613
		410,614
		410,615
		410,616
		410,617
	211	410,618
	407	410,619
	415	410,620
	423	410,621
	425	410,622
D13—	103	410,623
	110	410,624
	133	410,625
	139.6	410,626
	146	410,627
	147	410,628
		410,629
	151	410,630
	156	410,631
		410,632
	168	410,633
	173	410,634
	179	410,635
D14—	100	410,636
	113	410,637
	114	410,638
	115	410,639
		410,640
		410,641
		410,642
	117.9	410,643
	121	410,644
	138	410,645
	146	410,646
	147	410,647
	151	410,648
	163	410,649
	168	410,650
	215	410,651
	238	410,652
	240	410,653
		410,654
	248	410,655
D15—	13	410,656
	29	410,657
	123	410,658
	148	410,659
	199	410,660
D16—	131	410,661
	202	410,662
		410,663
		410,664
		410,665
	315	410,666
	327	410,667
	331	410,668
D17—	20	410,669
		410,670
	99	410,671
D18—	2	410,672
	15	410,673
	19	410,674
	36	410,675
	40	410,676
	53	410,677
D19—	20	410,678
	34	410,679
	42	410,680
	51	410,681
		410,682
	52	410,683
	64	410,684
	90	410,685
		410,686
D20—	41	410,696
		410,697
	99	410,698
D21—	318	410,699
		410,700
	365	410,701
	406	410,702
	416	410,703
	486	410,704
		410,705
	487	410,706
	488	410,707
	503	410,708
	561	410,709
	594	410,710
	648	410,711
	665	410,712
	699	410,713
	701	410,714
	715	410,715
	736	410,716
	738	410,717
	744	410,718
	753	410,719
	772	410,720
	791	410,721
	823	410,722
D22—	110	410,723
	122	410,724
	143	410,725
D23—	207	410,726
	209	410,727
		410,728
	223	410,729
		410,730
	227	410,731
	229	410,732
	233	410,733
		410,734
	238	410,735
	250	410,736
		410,737
	255	410,738
	299	410,739
D24—	108	410,740
	143	410,741
	155	410,742
	183	410,743
		410,744
	186	410,745
	192	410,746
	194	410,747
	200	410,748
	208	410,749
		410,750
D25—	16	410,751
	34	410,752
	38	410,753
	56	410,754
	114	410,755
D26—	9	410,756
	23	410,757
	28	410,758
	37	410,759
	38	410,760
	49	410,761
	145	410,762
	149	410,763
D27—	172	410,764
	189	410,765
D28—	35	410,766
	73	410,767
D29—	102	410,768
D30—	124	410,780
	129	410,781
D32—	25	410,782
	44	410,783
D34—	14	410,784
	24	410,785
	38	410,786
D99—	17	410,848
	29	410,849
	33	410,850

CLASSIFICATION OF PLANTS

P.—	7.1	10,946	76	10,943	87.12	10,954	131	10,948	256	10,950
	67.8	10,941	82.2	10,944	87.4	10,951	139	10,949	257	10,942
	68.1	10,953		10,945		10,955	228	10,952		10,947

GEOGRAPHICAL INDEX

OF RESIDENCE OF INVENTORS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	:	5,909,831	5,910,055	5,910,664		5,911,052		5,910,179			5,911,017
		5,910,486	5,910,058	5,910,669		5,911,054		5,910,192			5,911,019
		5,910,604	5,910,074	5,910,686		5,911,065		5,910,260			5,911,117
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		5,910,367	5,910,104	5,910,732		5,911,073		5,910,651			5,910,734
		5,910,783	5,910,107	5,910,739		5,911,075		5,910,654			5,910,791
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		5,911,115	5,910,129	5,910,752		5,911,108		5,911,163			5,910,920
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06	:	RE. 36,223	5,910,154	5,910,772		5,911,114	12	: 5,909,809			5,909,833
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		5,909,827	5,910,321	5,910,873		B1 203,108		5,910,474			5,910,162
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